INDEX FOR VOLUME 42

AUTHOR AND SUBJECT INDEX. New species and varieties in boldface type. Junior authorship indicated by pages in parentheses.

ABBOTT, E. V., 281
Acer negundo, tobacco ringspot virus on, 478
Acidity, see Hydrogen-ion concentration
Actidione, see Antibiotics, and Fungicides: actidione
ADSUAR, JOSE, (3)
AFANASIEV, M. M., 101
Agallia constricta (leafhopper), multiplication of wound tumor virus in, 269
Agalliana ensigera (leafhopper), vector for new strain of tomato curly top virus, 396
  sticticollis, vector for new strain of tomato curly top virus, 396
Age of host, relation to susceptibility of tomato to bacterial wilt, 631
  effect of safflower root rot development, 220
Agrobacterium rubi, eastern blueberry gall strain, description, 90
  tumefaciens, morphological varients, 8
    western blueberry gall strain, description, 90
Air-borne spores, distribution hypothesis, 323
AKELEY, R. V., (277)
Albizzia spp. (mimosa), Fusarium wilt, 694
Albugo candida, on horseradish, 109
  occidentalis, factors in pathogenesis, 17
    morphology and pathogenicity, 473
    on spinach, factors affecting development, 448
Aleurites montana, see Tung
ALEXANDER, L. J., 463, (467)
Alfalfa (Medicago sativa),
  bacterial wilt, maintenance of virulent inoculum by deep-freeze method, 13
  black stem, seed loss, 468
  crown bud rot, disease complex, 510
  crown rot, identification of incitant, 513
  damping-off, seed treatments, 22
    and root rot, control, 613
  mosaic virus, aphid transmission, 261
    strains in potato, 516
  Pierce's disease, vectors, 533
  Sclerotium rolfsii on, 1
  Volutella sp. parasitic on, 5
  witches' broom, 649
ALLARD, R. W., (515)
ALLEN, O. N., (613)
ALLEN, PAUL J., 483
ALLISON, J. LEWIS, 1, (22), 281
ALLISON, PATRICIA VAN BURGH, 1, (478)
Almond, bud failure in Jordanolo variety, 520
Alternaria **amaranthi** comb. nov., on Amaranthus paniculata in India, 668
  dianthi, carnation resistant to, 112
  porri, an incitent of onion blotch, 20
    f. dauci, on carrot, 215
  solani, effect of light on conidium production, 342
    effect of medium on sporulation and pathogenicity, 11
    inhibition point at various pH by helixin, 169
    physiologic races, 467
    spore germination, fungitoxicity of various chemotherapeutants, 127
    technique for observing spore germination on cleared leaves, 352
    on tomato, fungicide tests, 23
    vitamin nutrition, 657
  sp., part of transit rot complex of Vanda orchid flowers, 373
  tenuis, an incitant of onion blotch, 20
    on tomato fruit, 425
    var. sensu, longevity on stored grains, 13
  tenuissima, an incitant of onion blotch, 20
Amaranthus paniculatus, Alternaria blight in India, 668
American Phytopathological Society:
  abstracts of the 43rd annual meeting (Cincinnati), 1
  abstracts of the 44th annual meeting (Ithaca), 463
  proposed amendment to the constitution, 366
  report of 43rd annual meeting, 223
  reports and abstracts:
    Northeastern Division, 112
    Pacific Division, 511
    Potomac Division, 340
    Southern Division, 281
AMES, RALPH W., 289
Amino acids, in uredospores of various races of cereal rusts, 3
  synthesized by Ustilago zeae, 6
P-amino benozic acid, see Vitamins
Amylase inhibition, related to chemical constituents and fungitoxicity, 471
Anaerobic respiration, of glucose by fungi, effect of thiram on, 475
ANDERSON, AXEL L., 1, (52), 453
ANDERSON, CHRIS W., 110
ANDERSON, H. W., (13)
ANDERSON, RALPH L., 463
ANDES, J. O., 281
Anethum graveolens, see Dill
Anguillulina tritici (nematode), role in tundu bacterial disease of wheat, 291
Annulus tabaci see also Virus(es), tobacco ringspot — woody hosts of, 478
Antagonism between microorganisms, by Aspergillus clavatus, toward Bacillus subtilis, in sterile soil, 494
  by Bacillus polymyxa, toward Bacterium solanacearum, 4
  by Bacillus subtilis, toward a Rhizoctonia causing damping-off of sugar beet, 465
  by Bacillus sp. B6, toward Pythium spp. in soil, 618
  by Penicillium patulum, toward Pythium spp. in soil, 619
  by Streptomyces sp., toward Rhizocotonia solani, 473
  by Streptomyces sp. A67, toward Pythium spp. in soil, 618
  by Streptomyces venezuelae, toward Bacillus subtilis, 93
  by Trichoderma lignorum, toward Pythium spp. in soil, 618
  by Trichoderma viride toward Rhizoctonia solani, 465
  to Ceratostomella fimbriata by various organisms, 342
  to Pythium arrhenomanes, in soil, 12
  to Pythium arrhenomanes, by various microorganisms, 468
    tests of 5,638 bacterial isolates, 464
    tests of 5,218 fungal isolates, 469
    fungal isolates, 286
Anthracnose, peach, in Georgia, 343
  raspberry, control, 8
  tobacco, resistance to, in wild species of Nicotiana, 343
  of trees, 12
Antibiotics, see also Chemotherapeutants and Fungicides
    comparison of soil test with in vitro experiments on inhibition of Pythium root rot by actinomycetes, 284
    disappearance from the soil, 9
    effect on lesion production by plant viruses, 331
    recovery from soil, 295
    seed treatment, requirements for suitable control of damping-off, 613
  actidione, alfalfa damping-off, 616
    effect on mold count of processed black raspberries, 2
    inactivated in non-sterile soil, 9
    in the soil, 493
    phytotoxicity on cherry fruit, 14
    turf snow mold, 516
  aureomycin, adsorbed by clays in soil, 294

Antibiotics—*continued*
chloromycetin, activity in soil, 91
inactivated in non-sterile soil, 9
clavacin, inactivated in non-sterile soil, 9
in the soil, 493
endomycin, 506
fradicin, alfalfa damping-off, 616
gliotoxin, role in soil, 465
helixin, fungicidal activity, 13
production and purification, 506
Antibiotics
studies in relation to plant disease control, 168
helixin B, victoria blight of oat, 469
polymyxin, possible antagonism in control of bacterial wilt of tomato, 4
streptomycin, adsorbed and inactivted in soil, 9
bacterial soft rot of packaged spinach, 475
effect of cobalt on production of — by Streptomyces griseus, 123
streptothricin, adsorbed and inactivted in soil, 9
inhibition of tobacco necrosis and ring spot virus lesions, 332
terramycin, adsorbed by clays in soil, 294
inhibition of tobacco necrosis and ring spot virus lesions, 332
thiolutin, apple fire blight, 57
Fusarium wilt of tomato, 338
toximycin, from Bacillus subtilis, 20
Aphanomyces cladogamus, causing damping-off in peppers, 14
cochliodes, host range, 18
technique for producing zoospore inoculum, 18
euteiches, zoospores inoculum, 18
Aphelenchoides oryzae (nematode), laboratory culture, 21
nematocide tests, 463
seed treatment to control white tip of rice, 6
Aphis apii, vector for beet mosaic virus, 252
fabae, vector for alfalfa mosaic virus, 261
gossypii, vector for alfalfa mosaic virus, 261
medicaginis, vector for alfalfa mosaic virus, 261
Apium graveolens, see Celery
Apple, boron content of leaves and fruit, 464
effect of lime-sulfur and flotation sulfur on yield, 463
black rot, losses in Georgia, 288
cedar rust, inheritance of resistance, 19
dwarf fruit and decline, 4
fire blight, preliminary test for control with thiolutin, 57
russet, correlated with shrinkage in storage, 344
scab resistance, 11
Appresorial formation, in Phytophthora infestans, 16
Arachis hypogaea, see Peanut
Ark, Peter A., 320
Armstrong, G. M., 1, 255
Armstrong, Joanne K., (1), (255)
Arny, D. C., 222, (367), (469)
Asclepias syriaca, strawberry viruses in, 20
Ascochyta imperfecta, seed loss of alfalfa, 468
Ash, red, see Fraxinus pennsylvanica
Asparagus (A. officinalis),
Fusarium disease, on seedlings, 9
root-knot nematode, resistance, 6
rust, 13
Aspen, Hypoxylon canker, factors affecting, 463
Association of microörganisms, in flood fallowed banana soils, 476
Athow, Kirk, 660
Atkins, J. G., Jr., 1, (21), 282, 463
Aureogenus magnivena, wound tumor virus, 269
Autoradiographs, of fungi tagged with C^{14}, 431
Avocado, root rot, control by fungicide drench, 24
effect of irrigation, 35
Aycock, Robert, 428
Ayers, G. W., 25
Azab, Y. E., 282
Bacteria, see also under generic names
maintaining virulent inoculum by deep-freeze method, 13
six species, in apparently healthy pinto beans, 214
Bacterial soft rot of potato, role of suberization and periderm formation, 481
Bactericides, see under Fungicides
Bacterium solanacearum, controlled by antagonistic organism, 4
Bacillus polymyxa, antagonistic to Bacterium solanacearum, incitant of bacterial wilt of tomato, 4
inhibited by terramycin in soil, 295
subtilis, antagonistic toward a damping-off pathogen, 465
antibiotic toximycin from, 20
inhibited by Streptomyces aureofaciens in soil, 295
Bailey, D. L., 406
Bain, Douglas C., 497
Baines, R. C., 1, 77
Baker, Kenneth F., (478)
Baker, R. R., (21)
Bald, J. G., (478)
Baldacci, E., 38
Baldwin, M. M., (472)
Bardin, Roy, (573)
Bark canker of London plane, redbud and sweet gum, 16
Barley (Hordeum vulgare),
longevity in storage of several cereal seed fungi, 13
covered smut, effect of temperature and method of inoculation on post-emergence smutting, 117
loose smut, inheritance of resistance, 367
seed treatment with Spergon-SL, 476
mosaic virus, new, in Calif., 12
root rot, in Tennessee, 287
scald, field inoculation technique, 17
stem rust, on albino seedlings, 177
storage fungal infestations, 476
yellow dwarf virus, 15
Barnes, George L., 511, 512
Barnett, H. L., 1, 2, 57, 463, (476), 531
Barrat, J. G., (512)
Basidiobolus spp., from leaf mold, 341
Baxter, John W., 2
Bayberry, yellow virus, 17
Beale, Helen Purdy, (463)
Beale, J. H., 463
Bean (Phaseolus vulgaris),
alfalfa mosaic on, 344
anthracnose, seed treatment with Vancide 51, 1
ashy stem blight, 607
bacterial blight, chemotherapeutants, 72
charcoal rot, 607
fungus infection related to guttation, 520
halo blight, toxin production by pathogen, 475
Macrophomina leaf spot, 607
necrotic lesion strain of yellow bean mosaic virus, 24
powdery mildew, technique for fungicide screening test, 114
Rhizoctonia canker and blight, 607
rust, race 85 (new) in Maryland, 342
southern blight, 607
yellow mosaic virus (bean virus 2), in Montana, 101
white mold, fungicide tests, 477
broad — (Vicia faba), used for testing chemotherapeutants, 127
lima — (Phaseolus lunatus),
downy mildew, resistance, 43
root rot tolerance, 515
navy pea bean, seed treatment for anthracnose, 1
pinto, bacteria in apparently healthy seed, 214
effect of phosphate on inoculation with tobacco mosaic virus, 137
Beckman, C. H., 2, (13), 463
Beet (Beta vulgaris), see also Sugar beet
curly top virus, in potato, 516
damping-off, seed and soil borne infection, 520

Beet—*continued*
mosaic virus, aphid transmission study, 252
yellows, in Washington, 516
Bell, F. H., 340
Belonoliamus gracilis (nematode), associated with cotton wilt, 283
Beneke, E. S., 2, (24)
Bennett, C. W., 2, 535
Beraha, Louis, 2
Berbee, J. G., (2)
Berkeley, G. H., 2, 258
Beta vulgaris, see Beet and Sugar beet
Betula verrucosa, damping-off, affected by soil fertility and illumination, 502
Biochemical mutants, of Venturia inaequalis, 479
Biographical sketch, George James Wilds, Jr., 485
Herbert Spencer Jackson, 406
Oran Cecil Boyd, 405
Birch, see Betula
Bird, Julio, 3
Bitancourt, A. A., (12)
Black, L. M., 3, 269
Black measles (cause unknown) of grape, effect of dormant sodium arsenite spray, 158
Blephilia hirsuta, mint rust on, 2
Bloch, Robert, 483
Blodgett, E. C., 512
Bloom, James R., 3
Blueberry (Vaccinium spp.),
galls, bacterial, 88
incited by Nocardia vaccinii, 249
twig tip blight, strains of incitant, 513
Bobrov, Ruth Ann, 558
Boone, D. M., 479, (480)
Boosalis, M. B., 387
Boron, see Micronutrients
Borthwick, H. A., (341)
Botryodiplodia theobromae, on tung, 521
Botryosphaeria ribes, possible incitant of bark canker of London plane, redbud, and sweet gum, 16
on tung, 521
Botryosporium pulchrum, on cured tobacco, factors affecting development, 10
Botrytis cinerea, effect of actidione on conidia germination, 21
infection of bean leaves related to guttation, 520
tagged with C^{14}, 431
fabae, used with broad bean in testing chemotherapeutants, 127
sp., on blueberry, strains, 513
part of transit rot complex of Vanda orchid flowers, 373
Bowman, D. R., (10)
Box elder, see Acer negundo
Boyce, John S., Jr., 282, (438)
Boyd, Oran Cecil, a biographical sketch, 405
Boyle, Lytton W., 282
Boynton, Damon, (464)
Brakke, M. K., (3), (269)
Brassica spp., resistance to black rot, 497
Braun, Alvin J., 3
Bremia lactuae, mode of penetration of lettuce, 513
Brennan, Eileen, (112)
Bretz, T. W., 3, 435
Bridgmon, G. H., 65
Brierley, Philip, 341
Brinkerhoff, L. A., 98
Bromfield, Kenneth R., 479
Brooks, A. N., (173)
Broyles, James W., 3, (479)
Brown, A. M., 479
Bruehl, George W., 4
Bruer, H. L., 282, (287)
Brussels sprouts, Fusarium wilt, 256
Burger, W. C., (19), (420)
Burrell, A. B., 463, 464
Cabbage (Brassica oleracea var. capitata),
black rot, seed transmission, 5, 316
Fusarium wilt, race 1, 1
physiologic races, 255
mosaic resistance, relation of air temperature and virus concentration, 83
Cairns, Eldon J., 4, 464
Calavan, E. C., 512
Calla, bacterial chalk rot, 320
Camellia, corky excrescence, control, 16
Camellia sasanqua, Exobasidium on, 147
Campbell, Leo, 512
Candida albicans, inhibition point at various pH by helixin, 169
zeylanoides, inhibition point at various pH by helixin, 169
Cantaloupe (Cucumis Melo),
powdery mildew, control, 335
virus on, 8
Capitophorus fragaefolii (aphid), vector for strawberry viruses, 20
Capsicum frutescens, see Pepper
Carbohydrates, synthesized by Ustilago zeae, 6
Carbon disulfide, possible role in the fungicidal action of sulfur, 14
Cardona, Canuto, (114)
Carnation (Dianthus caryophyllus),
bacterial wilt, inoculation studies, 342
Fusarium wilt, breeding for resistance, 112
symptomless carriers, 21
mosaic virus, inactivated by zinc ion, 418
properties and electron microscopy, 289
root transmission, 21
Carrot (Daucus carota),
alfalfa witches' broom virus in, 27
black root rot, 215
foliage blight, compared with Stemphylium disease, 215
root scab complex, 9
Stemphylium disease, 215
umbel blight, 217
Carthamus tinctoris, see Safflower
Cash, L. C., (277)
Castanea sativa (European chestnut), susceptible to oak wilt fungus, 3
Castanopsis sempervirens (bush chinquapin), susceptible to oak wilt fungus, 3
Cation, Donald, 4
Cauliflower (Brassica oleracea var. botrytis),
black rot, susceptibility of commercial varieties, 497
Fusarium wilt, 256
Celery (Apium graveolens),
adaxial crack stem, 603
awl nematode on, 175
late blight, control, 519
nematode stunt, 13
nematode stunt and chlorosis, 651
"red root" complex in Florida, nematodes as a factor, 131
sting nematode on, 173
Celino, Martin S., 4
Cellulase activity, of fruit rot fungi, 474
Cephalosporium acremonium, associated with corn stalk rot, 20
Ceratostomella, see also Endoconidiophora
fimbriata, antagonism toward, by Streptomyces sp., 342
eradicant fungicides, 7
inheritance of sex, 479
sulfur soil treatment, 590
ulmi, antagonism toward, by Streptomyces sp., 343
control by pruning, 113
Cercis canadensis (redbud), bark canker, 16
Cercospora sojina, dried grain inoculum, 469
inheritance of resistance to, in soybean, 660
on soybean seed, 568
Cercosporella albomaculans, on turnip, control with ferbam, 281

Cerdosporina kikuchii, isolation from soybean seed, 285
Cereals, see also specific crops and under Grasses
root rot, in Tennessee, 287
Xanthomonas streak, 387
yellow dwarf virus, host range, 518
CETAS, ROBERT C., 464
Chalara quercina, see also Endoconidiophora fagacearum and Oak wilt
asigerous stage, 435
crossing of various isolates, 463
diploidization, 537
factors affecting growth and sporulation in culture, 2
growth in liquid culture, nutrition, 463
host range, five new woody hosts, 3
liquid culture for rapid identification, 57
longevity at various temperatures and relative humidities, 470
macroscopic growth in nature, 6
mycelal mat production on oak in Pennsylvania, 681
nutritional requirements, 2, 288, 463
perithecial stage, in culture, 3
role in dissemination, 691
plugging of xylem vessels associated with oak wilt, 2
potential source of perithecia in nature, 531
quick test for, 1
spore liberation, 537
from natural reservoirs, 476
CHAMBERLAIN, D. W., 4, 299
CHAPLIN, J. F., (15), (286)
CHAPMAN, R. A., 72
Chemotherapeutants,
1182 (4-chloro-3,5-dimethyl phenoxyethanol), tobacco mosaic virus, 465
alkyl dimethylethylbenzylammonium chloride, oak wilt, 11
p-aminobenzoic acid and p-aminobenzene sulfonamide, broad bean chocolate-spot, 129
2-(n-amyl)pyridine, comparison of fungitoxic and chemotherapeutic activity, 6
auramine, bean blight, 73
azo dyes, broad bean chocolate-spot, 128
benzoic acid, bean blight, 73
benzoyl methyl thiocyanate, bean blight, 73
butoxypolypropylene glycol, bean blight, 73
cadmium succinate, oak wilt, 11
calcium chloride, bean blight, 73
calcium sulfamate, oak wilt, 11
2-carboxymethylmercaptobenzothiazole salts, for various diseases, 7
sodium salt, comparison of fungitoxic and chemotherapeutic activity, 6
4-chloro-3,5-dimethylphenoxyethanol, comparison of fungitoxic and chemotherapeutic activity, 6
complex metallic dinicotine salicylates, 129
crotonic acid, bean blight, 73
cupric ion, tomato Fusarium wilt, 465
cyclopentenyl butyldithiocarbamate, bean blight, 73
dehydranone, bean blight, 73
a,a'dipyridyl, tomato Fusarium wilt, 465
dyes, bean blight, 75
2-(1-ethylamyl)-2-imidazoline-1-polyglycol, bean blight, 73
ethylene urea, bean blight, 73
HD 3(n-octadecyltrimethylammoniumpentachlorophenate), root injury reducing Fusarium wilt severity in tomato, 312
hydroxyquinoline derivatives, broad bean chocolate-spot, 128
8-hydroxy quinoline benzoate, oak wilt, 11
8-hydroxy quinoline sulfate, oak wilt, 11
lauryl isoquinolinium bromide, bean blight, 74
malachite green, oak wilt, 11
mercury compounds, bean blight, 75
miscellaneous compounds, bean blight, 75
2-(4-morpholinyl)-ethylphenylketone, bean blight, 73
Chemotherapeutants—*continued*
nabam (disodium ethylene bisdithiocarbamate), oak wilt, 11
n-(4-nitrophenyl)-3,4-dichlorobenzene sulfonamide, bean blight, 73
n-octadecyltrimethylammoniumbromide, bean blight, 73
n-octadecyltrimethylammonium pentachlorophenate, comparison of fungitoxic and chemotherapeutic activity, 6
root injury reducing Fusarium wilt severity in tomato, 312
oxyquinoline benzoate, comparison of fungitoxic and chemotherapeutic actiivty, 6
o-phenanthrolene, tomato Fusarium wilt, 465
phenols, bean blight, 74
phenylmercuritriethanolammoniumlactate, oak wilt, 11
potassium permanganate, bean blight, 73
protocatechuic acid, bean blight, 73
quaternary ammonium compounds, bean blight, 75
quinolinol derivatives, bean blight, 74
8-quinolinol phosphate, bean blight, 73
8-quinolinol salicylate, bean blight, 73
8-quinolinol sulfate, stock Rhizoctonia root rot, 476
salicylates, bean blight, 74
salicylic acid, broad bean chocolate-spot, 128
bean blight, 73
sodium dimethyldithiocarbamate, oak wilt, 11
+ sodium 2-mercaptobenzothiazole, oak wilt, 11
sodium 2-mercaptobenzothiazole, oak wilt, 11
sodium trichlorophenate, oak wilt, 11
sorbic acid, bean blight, 73
sulfonamides, bean blight, 75
Tergitol-4, bean blight, 73
ureas and thioureas, broad bean chocolate-spot, 130
zinc sulfate, bean blight, 74
Chemotherapy:
activity independent of fungitoxicity, 6
alteration of disease resistance with chemicals, 563
behavior of groups of reported chemotherapeutants, 127
foliage spray applications for control of Dutch elm disease, 7
oak wilt, test of 37 organic chemicals, 11
plant regulators, effect on Fusarium wilt susceptibility of tomato, 465
postulated chelation of Fusarium toxin, 465
tomato Fusarium wilt, with thiolutin, 338
root injury as a factor in assessment, 113, 311
Chenopodium urbicum, local lesion host for lettuce mosaic virus, 478
CHEO, PEN-CHING, 4, (16), (301), 306, 377
CHEREWICK, W. J., (472)
Cherry (Prunus avium and P. cerasus),
crown gall, incipient in seedlings, 520
leaf spot, fungicide tests, 14
little cherry virus disease, grafting experiments, 477
mora virus disease, 347
necrotic ringspot virus strains, 470
ringspot virus, effect on growth, 470
seed transmission, 4
separation, 517
storage rots, controls, 24
western X disease, symptoms on sweet cherry, 519
western X little cherry virus, effect on seed, 515
yellows, seed transmission, 4
separation, 517
Chestnut, European, see Castanea sativa
blight, epiphytotic in Italy, 38
Chickpea (cicer arietinum),
Mycosphaerella blight, basis of resistance, 422
CHILDS, J. F. L., 265
CHILTON, JOHN E., 5
CHILTON, S. J. P., (282)
CHRISTENSEN, C. M., (476)
CHRISTIANSEN, D. W., (211)
CHRISTIE, J. R., 173, 483

Chrysanthemum, stunt, increase of symptoms under high intensity light, 341
Cicer arietinum, see Chickpea
Circulifer tenellus (leafhopper), inducing vein clearing of sugar beet, 535
Citrus limonia, see Lemon
sinensis, see Orange
cachexia disease of, 265
tristeza, relation to cachexia disease, 267
grafting experiments, 280
xyloporosis, relation to cachexia disease, 267
Citrus-root nematode, on olive, 77
CLARKE, O. F., (1)
Claviceps spp., inoculation and culture, 513
CLAYTON, E. E., 5, 482
Climatic disease, defined, 283
Clostridium carbonei, in apparently healthy pinto beans, 214
Clover:
alsike (Trifolium hybridum),
rootlet rot, 514
Volutella sp. parasitic on, 5
Kaimi (Desmodium canum),
new virus disease of, in Hawaii, 517
Ladino (Trifolium repens),
Sclerotium rolfsii on, 1
red (Trifolium pratense),
legume virus reservoir, 467
Pythium spp., comparison of pathogenicity, 10, 245
root rot, 466
vein mosaic, crystalline inclusions, 518
Volutella sp. on, 5
Cobalt, see Micronutrients
COCHRAN, L. C., (443), 512
COCHRANE, VINCENT W., 5
Coffee, spot anthracnose, 12
COHEN, MORRIS, 464,(474), 512, (519)
COLBURN, R. W., (25)
Collards, Fusarium wilt, 256
Colletotrichum falcatum, tagged with C^{14}, 431
lagenarium, factors affecting spore germination and pathogenicity, 478
hydrolysis of pectin, 474
in tomato fruit, 18
lindemuthianum, infection of bean leaves related to guttation, 520
seed treatment of navy pea bean, 1
lini, physiologic specialization, 18
phomoides, effects of tribasic copper sulfate and ziram on cultures, 470
growth inhibition by solanine, 1
hydrolysis of pectin, 474
on tomato, fungicide tests, 114
pathogenic variation, 18
resistance to, in tomato, 113
sativum sp. nov., on vetch, 670
sp., on tobacco, resistance to anthracnose among Nicotiana spp., 343
trifolii, alfalfa seed treatment, 22
viciae, on vetch, 670
villosum, on vetch, 670
COMEGYS, W. R., (464)
Complement fixation for differentiating strains of tobacco mosaic virus, 16
Conidial germination, Albugo occidentalis, factors affecting, 17, 449
Conidial matrix, effect on spore germination and pathogenicity of Colletotrichum lagenarium, 478
Conidiobolus brefeldianus, from leaf mold, 341
minor, from leaf mold, 341
spp., isolation technique, 341
utriculosus, 341
Conidium production, see Sporulation
Conifers, Rhizoctonia damping-off, 464
Coniothyrium fuckelii, copper nutrition, 468
CONNELL, THOMAS D., 464
CONOVER, ROBERT A., (197)
COOK, A. A., 5, 162, 316
COONS, G. H., 341, 482
COOPER, D. C., 25
COOPER, W. E., 282
Cooper, see Micronutrients
Corium **zeae** n. sp., maize leaf-fleck virus, 688
CORMACK, M. W., 5, (510)
Corn (Zea mays),
cold-testing, 467
emergence related to injury and drying of seed, 221
seed germination test technique, 11
seed treatment, varietal differences, 284
brown spot, evaluation of inoculation techniques, 284
crazy top, 675
Diplodia seedling blight, varietal resistance, 473
stalk rot, 476
varietal resistance, 473
ear rot, fungal infections of apparently healthy seed, 286
leaf-fleck virus disease, 683
Pythium root rot, 12
inhibited by actinomycete, 284
control by antagonistic microorganisms, 468
smut, partial vacuum inoculation, 17
stalk rot, following corn borer, 20
sting nematode, 173
Cortitium vagum, variation in culture, 473
Corynebacterium fimi, in apparently healthy pinto beans, 214
flaccumfaciens, in apparently healthy pinto beans, 214
helvolum, in apparently healthy pinto beans, 214
insidiosum, maintenance of virulent inoculum by deep-freeze method, 13
tritici, on wheat, 291
Corynespora cassiicola, dried grain inoculum, 469
COSTA, A. S., 231, 280, 396
Cotton (Gossypium spp.),
anthracnose of seedlings, seed treatment, 470
bacterial blight, frequency of varietal resistance, 98
boll rot, fungicide tests to control, 285
Fusarium wilt, inheritance of resistance, 287
sting nematode a factor in disease severity, 283
tight lock, fungicide tests to control, 285
Verticillium wilt, seedling inoculation technique, 288
Cowpea (Vigna sinensis),
assay host for cucumber virus 1, 328
cucumber mosaic, strain of cowpea susceptible to systemic infection, 442
Fusarium wilt, varietal resistance, 283
mutation rate of tobacco necrosis virus on, 156
COX, C. E., (11), (470), (475)
COX, R. S., 118, 464, (468)
CRALL, J. M., 5
CRALLEY, E. M., 6
CRITTENDEN, H. W., 6
Cronartium cerebrum, compared with Peridermium appalachianum, 116
coleosporioides, compared with Peridermium appalachianum, 116
comptoniae, compared with Peridermium appalachianum, 115
fusiforme, compared with Peridermium appalachianum, 116
ribicola, compared with Peridermian appalachianum, 116
pruning of diseased pines, 475
Crop rotation, for control of golden nematode, 345
CROWDY, S. H., 127
CROWE, A. D. (464)
CROWLEY, D. C., (513)
Crown gall, growth rate of tissue in vitro, 514
Cucumber (Cucumis sativus),
angular leaf spot, 105
mosaic, virus inhibitor in resistant varieties, 349
stem and fruit rot, 14

Cucumber—*continued*
virus on, 8
wild, virus on, 8
Cucumis melo, see Cantaloupe
Cucumis sativus, see Cucumber
Cucurbits: seven viruses on, in California, 8
Cuerna yuccae (leafhopper), vector of Pierce's disease virus, 533
CULVER, ANDREW J., JR., 513
CUMMINGS, R. H., 513
CUMMINGS, GEORGE B., (10), (115)
Cunila origanoides, mint rust on, 2
CURL, E. A., 6
Curvularia lunata, effect of light on conidium production, 342
Cuscuta campestris, transmission of alfalfa witches' broom virus, 27
transmission of bayberry yellows virus, 17
grovonii, transmission of strawberry viruses 1 and 2, 20
subinclusa, transmission of peach X disease virus, 475
transmission of strawberry viruses 1 and 2, 20
CUTTER, VICTOR M., JR., 479
Cytology, of Helminthosporium carbonum, 480

Dactylis aschersoniana, purple leaf spot, 653
glomerata, purple leaf spot, 653
DAINES, ROBERT H., 112
Dalbulus maidis (leafhopper), study on specific transmission of viruses, 663
Damping-off, beet, relative importance of seed and soil borne infection, 520
conifer seedlings, effect of humus, 202
seed treatment of pea and cotton, 470
sugar beet, control, 465
tree seedlings, affected by soil fertility and illumination, 501
vegetable seedlings, caused by Aphanomyces cladogamus, 14
DANA, B. F., (477)
DARLEY, ELLIS F., 547
Daucus Carota, see Carrot
DAVIES, MARY-ELIZABETH, (127)
DAVIS, DAVID, 6, (7), 465, 563
DECKER, PHARES, 283
Defense reactions of plants to toxins, 483
Deficiency diseases, see Mineral element deficiency
DELWICHE, C. C., (519)
DEMAREE, J. B., 88, 249
DESJARDINS, P. R., (343)
Desmodium canum, see Clover, Kaimi
Deuteron bombardment, effect on pathogenicity and serology of viruses, 472
DEVAY, J. E., 6, (17)
Developmental races, defined, 645
DEWOLFE, T. A., (512)
DEZEEUW, DONALD J., 52
DIACHUN, STEPHEN, 6
Dianthus barbatus, see Sweet William
Dianthus caryophyllus, see Carnation
Diaporthe phaseolorum batatatis, on soybean, inoculation method, 5
Dichanthium annulatum, new Sclerospora on, 596
DICK, J. B., (287)
DICKSON, J. G., (10), (245), 465
DIENER, T. O., (512)
DIENER, U. L., 7
DIETZ, SHERL M., (513)
Dill (Anethum graveolens),
Fusarium root rot and wilt, 1, 152
nematode on, in Conn., 13
DILLER, J. D., 341
Dimethylamine, possible role in the fungicidal action of sulfur, 14
DIMOND, A. E., 7, (22), 72, (113), (311), 465, (472), (563), (599)
Diplodia spp., infecting apparently healthy corn seed, 286
zeae, associated with corn stalk rot, 20
correlation of growth rate on plant juice extracts with resistance, 476
correlation of varietal resistance in corn to seedling blight and stalk rot, 473
Disease development, white rust of spinach, factors affecting, 451
Disease resistance, affected by root injury, 311
alteration of, with chemicals, 563
multiple, in oats, breeding, 482
in potato, breeding, 483
in strawberry, 468
in sugar beet, breeding, 482
in tobacco, breeding program summary, 482
in Wisconsin tobacco, 12
in tomato, 197
of apple to scab, use of tetraploids, 11
of carnation, 112
of chickpea to Mycosphaerella blight, basis of resistance, 422
of corn to Diplodia stalk rot, correlation with growth of pathogen on plant extracts, 476
varietal correlation to Diplodia seedling and stalk rot, 473
of cucumbers, to mosaic virus, 349
of lima bean, to root rot, 515
of potato to late blight, problems in breeding, 277
to Verticillium wilt correlated with lateness of variety, 26
of safflower, to root rot, 219
of spinach, to cucumber virus 1, 304
of sweet potato, to internal cork, 287
of tobacco, testing methods for evaluating, 5
to black shank, 288
to wildfire, 12
of fluecured tobacco varieties, 284
of Wisconsin tobacco to mosaic virus, 8
of tomato, to southern bacterial wilt, inoculation methods used to test, 628
throughout plant, to Fusarium wilt, 474
of tomato fruit, constitutents for resistance to anthracnose, 18
Disease susceptibility, of cowpea strain to systemic infection by cucumber virus 1, 442
Ditylenchus nematode, anabiotic survival, 464
DOBIE, NORMAN D., 513, 693
Dodder, see Cuscuta spp.
Dolichodorus heterocephalus (nematode), factor in "red root" complex on celery in Florida, 131
DOOLITTLE, S. P., 7
DORSEY, C. K., (476), (537)
Dosage-response data, differentiation between inherent fungitoxicity and permeation, 457
Draeculacephala californica (leafhopper), vector of Pierce's disease virus, 533
crassicornis, vctor of Pierce's disease virus, 533
noveboracensis, vector of Pierce's disease virus, 533
DRECHSLER, CHARLES, 341
DRIVER, CHARLES H., 479
DUNEGAN, JOHN C., 341, (343)
DUNLAP, V. C., (476)
DUNLEAVY, JOHN M., 465

Echinochloa crus-galli, Ephelis oryzae on, 634
Eggplant, Verticillium wilt, chemotherapy, 7
EGLITIS, MAKSIS, 513
EICHENMULLER, J. J., 7
EIDE, CARL J., 465, (481)
Electrophoresis, used in quantitative study of competition between two strains of tobacco mosaic virus, 464, 474, 519
Eleocharis dulcia (Chinese water chestnut), awl nematode on, 114
ELLISON, J. HOWARD, 25

Elm, Dutch — disease, control by pruning, 113
chemotherapeutant foliage spray, 7
tomato rnig spot virus strain on, 477
Emge, R. G., 133
Endoconidiophora, see also Ceratostomella
fagacearum sp. n., asigerous stage of Chalara quercina, 435
sexuality, 438
fimbriata f. platani, destructiveness on planetree, 236
Endothia parasitica, perithecia in culture, 39
English, Harley, 513
Environment, effect on concentration of cucumber virus 1 in spinach, 4
effect on lemon sieve tube necrosis, 18
Environmental races, defined, 645
Enzyme activity, extracellular, method for study with C^{14} labeled fungus material, 23
Enzymes, fermentive, inhibition by chloranil, 11
Ephelia oryzae, on grasses in India, 634
Eradication, by pruning, of Dutch elm blight in individual trees, 113
Erodium spp., red leaf virus on, 110
Erwin, Donald C., 32, 513
Erwinia amylovora, rapid inoculation of pear seedlings, 341
f. rubi, on raspberry, 114
aroideae (?), on calla, 321
caratovora (?), on calla, 321
Erysiphe cichoracearum, on cantaloupe, 335
graminis var. tritici, comparison of reaction on wheats, 8
Escarole, bacterial soft rot, 112
Ethylene diamine, possible role in the fungicidal action of sulfur, 14
Evans, Elfed, 465
Evans, Marshall, 7
Exobasidium camelliae var. gracilis, 147

Fassuliotis, George, 466
Feazell, George D., 7
Feder, William A., 373, 466
Feichtmeir, Edmund F., 260
Feldmesser, J., (193), (466), 466
Felix, E. L., 283
Fergus, C. L., (681)
Fermentation, effect of chloranil on fermentive enzyme systems of fungi, 11
Ferrell, William K., (515)
Fig, Phomopsis canker, 513
Filaree, red leaf virus on, studies, 110
Fink, George, (98)
Fir, Douglas, factors affecting decay rate, 518
Fischer, George W., 479
Fitzpatrick, R. E., (516)
Flax, rust, disease development, 204
technique for inoculation with Fusarium, 515
virulence of Colletotrichum lini, 18
Flock, R. A., (533)
Flood fallow of banana soils, soil flora, 476
Fluorine, injury to vegetation, 112
Foliar sprays, see Nutrition, hosts and suspects
Folic acid, see Vitamins
Folsom, Donald, 112, (114)
Fomes pini, factors affecting decay of fir by, 518
Food processing, mold count in black raspberries following various sprays, 2
Foster, H. H., 7
Fragaria chiloensis, see Strawberry
vesca, indicator for strawberry viruses 1 and 2, 20
Fraxinus pennsylvanica, tobacco ringspot virus on, 478
Frazier, N. W., (533)
Frederick, Lafayette, 514
Freitag, J. H., 8, 533
French, R. G., (6)
Friedman, B. A., 112
Frost injury, blister shake of yellow poplar, 21
Fulton, J. P., 8
Fulton, Robert H., 8
Fulton, R. W., 8, (12), 156, (331), 413
Fumigation, of potato handling equipment, 489
Fungicides, general:
absorption (selective), studied with radioactive isotopes, 478
accumulation of fungicide by spores, 470, 471
action of breakdown of dithiocarbamates, 477
amylase inhibition related to fungitoxicity, 471
anaerobic breakdown of glucose in fungi affected by thiram, 475
bioassay of amount of fungicide on commercially treated oat seeds, 222
concentrated sprays, for control of black rot and downy mildew on grapes, 3
constitution of quinonoid and benzenoid compounds related to fungitoxicity, 471
dosage, absorption of fungicides by spores, 470
dry and slurry seed treatment comparisons, 52
fungitoxicity independent of chemotherapeutic activity, 6
laboratory ED 50 related to field performance, 113
mold count in processed black raspberries, effect of various fungicidal sprays, 2
penetration, related to water- lipid-solubility, 17
permeation, related to lipid solubility, 457
prediction of field performance, 477
slurry preparations compared with wettable powders, 23
spreader-stickers, CP-5, with cotton sprays, 285
Triton, 8
Tween 20, for preharvest treatment of spinach, 475
tests using half-tree plots, 114, 353
toxicity, of amorphous droplets compared to crystalline form of sulfur, 200
studied with radioactive elements, 478
vapor pressure of amorphous droplets compared to crystalline form of sulfur, 200
volatile chemicals for reducing fruit rots, 19
wash-off curve related to field performance, 113
Fungicides (specific compounds), see also Chemotherapeutants:
actidione, see also Antibiotics, actidione
cherry leaf spot, 14
effect on conidial germination, 21
tests for control of small fruit storage rots, 24
turf diseases, 22
Agrox, corn seed, 284
potato seed piece treatment, 26
Arasan, alfalfa seed treatment, 22
asparagus Fusarium seedling disease, 9
cereal smuts, 10
cereal Victoria blight, 10
comparison of dry and slurry application, 52
corn seed, 284
pea seed protectant, 10
potato seed piece treatment, 26
safflower rust, seed treatment, 109
soybean, effect on nodule bacteria, 19
sugar beet, seedling diseases, application rates, 13
Arasan SF, pea seed protectant, 10
benzenoid compounds, relation of fungitoxicity to amylase inhibition, 471
Bioquin, effect on fungus growth, 471
Bioquin 1 (copper 8 quinolinolate),
effect on fungus growth, 471
erradicant for Ceratostomella fimbriata, 7
Bisphenol A, peach fruit rot, 342
bordeaux, apple black rot, phytotoxicity, 288
effect on fungus growth, 471
lemon brown rot, 512
Cadminate (organic cadmium compound), turf diseases, 22
turf snow mold, 516
calcium hypochlorite, for post-harvest control of peach brown rot, 7
Calo-clor, turf diseases, 22, 516
Calocure, turf snow mold, 516

Fungicides—*continued*

carbon disulfide, possible role in the action of sulfur, 14
C & C 224, potato seed piece treatment, 26
C & C 1025, turf snow mold, 516
Ceresan, bean charcoal rot, 607
Ceresan M, bioassay of treated oat seed, 222
cereal smuts, 10
comparison of dry and slurry application, 52
safflower rust, seed treatment, 109
snow mold of wheat, 475
Victoria blight on cereals, 10
Ceresan, New Improved, cereal smuts, 10
gladiolus, 518
Victoria blight on cereals, 10
chloranil (tetrachloro-para-benzoquinone), 288
alfalfa seed treatment, 22
cereal smuts, 10
comparison of dry and slurry application, 52
effect on fermentive enzyme systems in fungi, 11
loose smut of barley, 476
pea seed protectant, 10
potato seed piece treatment, 26
soybean, effect on nodule bacteria, 19
turf snow mold, 516
Victoria blight on cereals, 10
chlorinated phenols, potato scurf, 512
chloropicrin, in steam for storage-house fumigation, 513 693
Clorox, peach fruit rot, 342
Cop-O-Zink, white mold of bean, 477
Copper A, lemon brown rot, 512
peach fruit rot, 342
copper carbonate, cereal smuts, 10
Crag 341, raspberry anthracnose, 23
peach fruit rot, 342
Crag 531, peach fruit rot, 342
turf diseases, 22
turf snow mold, 516
Crag 640, lemon brown rot, 512
Crag 658, peach fruit rot, 342
Crag 1025, turf diseases, 22
Crag 5379, peach fruit rot, 342
cupric chloride, effect on fungus growth, 471
cupric sulfate, effect on fungus growth, 471
peach bacterial spot, dormant spray, 14
cuprous oxide, effect on fungus growth, 471
DHA (dehydroacetic acid), Vanda orchid flower rot, 373
DHA-S (sodium salt of DHA), peach brown rot, 19
peach fruit rot, 342
dimethylamine, possible role in the action of sulfur, 14
2,4-dinitrofluorobenzene, pea seed, 470
Dithane D-14, see also nabam,
plus ferric sulfate, for post-harvest control of peach brown rot, 7
Dithane Z-78, see zineb
2-dodecyl-2-imidazoline, lipid- water-solubility, 17
Dow 9B, alfalfa seed treatment, 22
pea seed protectant, 10
safflower rust, seed treatment, 109
Dowcide A, Vanda orchid flower rot, 373
Dowcide G, soil application for control of Phytophthora cinnamomi, 24
ethylene bisdithiocarbamtes, for post-harvest control of peach brown rot, 7
ethylene diamine, possible role in action of sulfur, 14
ferbam (ferric dimethyl dithiocarbamate),
apple black rot, 288
cherry leaf spot, 14
effect on fungus growth, 471
effect on mold count of processed black raspberries, 2
raspberry anthracnose, 23
raspberry anthracnose and spur blight, 8
turnip-green leaf spot, 281
plus Phygon, raspberry anthracnose, 23
formaldehyde, onion smut, 15
phytotoxic residue in flats, 171

Fungicides—*continued*

General Chemical 1189, for post-harvest control of peach brown rot, 7
Glyoxalidine (2-heptadecyl-2-imidazoline),
interaction with fungus spores, 15
lipid- water-solubility study, 17
true dosage at ED 50, 470
cherry leaf spot, 14
hydrogen sulfide, possible role in action of sulfur, 14
2-imidiazoline derivatives, fungitoxicity related to lipid solublity, 458
Iscothan (dinitro capryl phenyl crotonate),
cantaloupe powdery mildew, 335
peach fruit rot, 342
KF 467, pea seed protectant, 10
treatment of various vegetable and cereal seeds, 11
lime-sulfur, apple trees, cumulative effect, 463
lysis of rust spore germ tubes, 70
peach fruit rot, 342
manganese ethylene bis dithiocarbamate, cherry leaf spot, 14
onion blast and mildew, 15
potato seed piece treatment, 26
raspberry anthracnose, 23
slurry preparation compared with wettable powders, 23
tomato anthracnose and gray leaf spot, 114
M. E. M. A., corn seed, 284
mercuric chloride, cereal seed treatment, 471
gladiolus, 518
Mergamma, corn seed, 284
nabam, onion blast and mildew, 15, 212
soil application for control of Phytophthora cinnamomi, 24
nabam-zinc, cherry leaf spot, 14
Natriphene, Vanda orchid flower rot, 373
nitrophenol carbonate, peach fruit rot, 342
4-nitrosopyrazole derivatives, fungitoxicity related to lipid solubility, 459
Orthocide 406 (n-trichloromethylthio tetrahydrophthalimide),
cherry leaf spot, 14
cotton boll rot, 285
grape storage decay, 514
lemon brown rot, 512
onion smut, 15
peach brown rot, 7
peach fruit rot, 342
potato seed piece treatment, 26
raspberry anthracnose, 23
turf snow mold, 516
Panogen, cereal smuts, 10
safflower rust, seed treatment, 109
Victoria blight on cereals, 10
Parathion, for post-harvest control of peach brown rot, 7
Parzate, onion blast and mildew, 15
potato seed piece treatment, 26
safflower rust, seed treatment, 109
phenols, oxidized to quinones by fungus, 473
Phygon (2,3-dichloro-1,4-naphthoquinone)
alfalfa seed treatment, 22
comparison of dry and slurry application, 52
pea seed protectant, 10
potato seed piece treatment, 26
safflower rust, seed treatment, 109
stem rust of wheat, 465
PMAS, turf snow mold, 516
propylene glycol, peach fruit rot, 342
Puratized, effect on fungus growth, 471
inactivation by clays, 513
Puraturf, turf snow mold, 516
Puraturf GG, turf snow mold, 516
Puraturf 177, turf snow mold, 516
8-quinolinol sulfamate, peach fruit rot, 342
quinonoid compounds, relation of fungitoxicity to amylase inhibition, 471

Fungicides—*continued*
Rohm & Haas (CR-2379, for post-harvest control of peach brown rot, 7
Santobrite (sodium pentachlorophenate), erradicant for Ceratostomella fimbriata, 7
Seedox, peach fruit rot, 342
safflower rust, seed treatment, 109
Semesan bel, potato seed piece treatment, 26
Semesan Jr., corn seed, 284
sodium dialkyldithiocarbamates, fungicidal action, 472
sodium salt of dehydroacetic acid, tests for control of small fruit storage rots, 24
Sound Delivery, tests for control of small fruit storage rots, 24
Special Semesan (mixture of hydroxymercurichlorophenol and hydroxymercuricresol) turf diseases, 22, 516
Spergon, see chloranil
sulfur, flotation, apple trees, cumulative effects, 463
interaction with fungus spores, 15
mode of action, 14
peach brown rot, 7
peach fruit rot, 342
wettable, peach brown rot control, 19
Tact-C-Lect, turf snow mold, 516
turf diseases, 22
Tersan, onion smut, 15
turf snow mold, 516
tetrachloroethylene, fruit rots, 19
tetrachloro-para-benzoquinone, see chloranil, 288
thiram (tetramethyl thiuram disulfide), see also Arasan,
effect on anaerobic breakdown of glucose by fungi, 475
onion smut, 15, 469
pepper seedlings, damping-off, 14
potato seed pieces, 25
turf diseases, 22
tribasic copper sulfate, celery late blight, 519
cotton boll rot, 285
effect on Colletotrichum phomoides, 470
tomato anthracnose and gray leaf spot, 114
cherry leaf spot, 14
trichloroethylene, fruit rots, 19
triethylene glycol, peach fruit rot, 342
Vancide 51 (sodium salts of dimethyl dithiocarbamic acid and of 2-mercaptobenothiazole),
bean anthracnose in navy pea bean seed, 1
cereal smuts, 10
onion smut, 15
potato seed piece treatment, 26
soil application for control of Phytophthora cinnamomi, 24
sweet potato black rot, 7
turf diseases, 22
Victoria blight on cereals, 10
Zac (zinc dimethyl dithithiocarbamate-cyclohexylamine), slurry preparation compared with wettable powders, 23
zinc-copper lime, lemon brown rot, 512
zinc oxide, potato seed piece treatment, 26
zineb (zinc ethylene bisdithiocarbamate),
effect on growth and zinc content of tomato plants, 133
cotton boll rot, 285
onion blast and mildew, 15, 212
potato seed pieces, 25
tomato anthracnose and gray leaf spot, 114
ziram (zinc dimethyl dithiocarbamate),
celery late blight, 519
effect on Colletotrichum phomoides, 470
potato seed piece treatment, 26
slurry preparation compared with wettable powders, 23
tomato anthracnose and gray leaf spot, 114
white mold of bean, 477
ziram and zinc mercaptobenzothiazole, slurry preparation compared with wettable powders, 23
Fungitoxicity, contrasted with chemotherapeutic activity, 563
related to lipid-solubility, 17, 457
relative effect of phenols and quinoes on black and hyaline fungi, 473
sulfur, compounds concerned in mode of action, 14
Fusarium acuminatum, an incitant of alfalfa crown bud rot, 510
avenaceum, an incitant of alfalfa crown bud rot, 510
bulbigenum var. niveum, virulent strain on Iroquois muskmelon, 465
conglutinans, physiologic races, 255
physiologic races of, 1
dianthia, breeding carnation resistant to, 112
lycopersici, effect on phosphorus, distribution in tomato, 22
on tomato, effect of root injury, 311
on tomato, reduced disease severity related to root injury, 113
physiology and pigment production, 119
moniliforme, associated with corn stalk rot, 20
infecting apparently healthy corn seed, 286
nivale, on turf, fungicide tests, 516
oxysporum, on asparagus seedlings, 9
on cabbage and radish, 1
f. batatas, antagonism toward, by Streptomyces sp., 343
sulfur soil treatment, 590
f. dianthi, symptomless carriers, 21
f. gladioli, penetration of corms prevented by wound periderm, 342
f. lini, technique for flax inoculation, 515
f. lycopersici disease index on tomato increased by foliar sprays, 3
effect of plant regulators on wilt severity in tomato, 465
inhibited by thiolutin, 338
on tomato, chemotherapy, 465
possible use of ionizing radiation for disease therapy, 559
wilting mechanism, 18
f. narcissi, effect of temperature on growth, 407
f. perniciosum, Toole Race 1, and Toole Race 2, 694
f. vasinfectum, inheritance of resistance to—in cotton, 287
roseum, an incitant of root and rhizome rot of peppermint, 514
solani f. phaseole, on lima bean, tolerance to, 515
f. pisi, effect of chloranil on fermentive enzyme systems, 11
sp., associated with nematodes on celery, 652
on grains, 468
on orchid, 517
on peppermint, 514
spp., specificity of host-pathogen, 1
vasinfectum, physiology and pigment production, 119
Futrell, Maurice C., 8

Gainor, C., 8
Gallegly, M. E., (16), 461, 466
Galls, blueberry, bacterial, 88
growth rate in vitro of bacteria-free crown gall tissue, 514
on cherry seedlings, 520
produced by morphological varients of Agrobacterium tumefaciens, 8
production of indole acetic acid by Ustilago zeae, 24
root, incited on tomato by golden nematode, 466
Garren, K. H., (607)
Gasiorkiewicz, E. C., 9, (25), 183
Gattani, M. L., 70
Gaylussacia baccata, possible host of blueberry gall actinomycete, 249
Genetic factors for resistance: carrot genotypes susceptible to root scab complex, 9
in apple, to scab, 11
in apple, to cedar rust, 19
in lima bean to downy mildew, 43
in Nicotiana to tobacco mosaic virus, 40

Genetic factors—*continued*
in onion to downy mildew, 22
in peppers, morphology of stylar region of fruit, 7
in potato to late blight, 277
in potato hybrids to late blight, 26
in soybean to frog-eye leaf spot, 660
in spring barley to loose smut, 367
in sugar beets to Cercospora leafspot, 344
in Wisconsin tobacco to mosaic, 8
Genetics of microörganisms: Ceratostomella fimbriata, inheritance of sex, 479
Chalara quercina, crossing of various isolates, 463
Phytophthora infestans, races, 26
Pyrenochaeta terrestris, induced mutation by nitrogen mustard, 183
Ustilago zeae, sporidial mutations, 480
Venturia inaequalis, gene pairs conditioning pathogenicity, 480
induced biochemical mutants, 479
GERDEMANN, J. W., 466
Germination inhibitor, of seeds from wood of Prunus spp., 285
Gibberella zeae, associated with corn stalk rot, 20
GIBSON, ROY E., (4)
GIDDINGS, N. J., 514, (516)
GILPATRICK, J. D., (417)
Gladiolus, bean virus 2 on, 65
corm rot, role of wound periderm, 342
cucumber virus 1 on, 65
effect of mercurial fungicides, 518
red leaf spot, 363
smut, sori in corms, 578
tobacco ring spot virus on, 65
white break, 65
Gloeosporium sp., part of transit rot complex of Vanda orchid flowers, 373
Glomerella cingulata, hydrolysis of pectin, 474
inhibition point at various pH by helixin, 169
on peach, in Georgia, 343
tagged with C^{14}, 431
in tomato fruit, 18
Glycolysis in fungi, effect of thiram on, 475
GODFREY, G. H., 335
GOLD, A. HERBERT, 9, (12), (519)
GOLDSWORTHY, M. C., (341)
Gomphrena globosa, local lesion host for lettuce mosaic virus, 478
GOPALKRISHNAN, K. S., 338
Gossypium spp., see Cotton
GETO, S., 466
GOTTLIEB, DAVID, (4), 9, 91, (294), (465), 493
GOULD, CHARLES J., (514)
Grafting, sieve tube necrosis of lemon, 18
transmission of lilac ring spot virus, 463
GRAHAM, J. H., 466, 653
GRAHAM, K. M., 9
GRAHAM, R. W., (214)
GRAHAM, T. W., 9, (283)
Grain dust, microbiological content, 476
GRAM (see Chickpea)
GRANT, T. J., (280)
Grape (Vitis vinifera), black measles (cause unknown), reduced incidence with dormant sodium arsenite spray, 158
black rot, control with concentrated sprays, 3
downy mildew, control with concentrated sprays, 3
Pierce's disease, vectors, 533
sooty blotch, 518
storage decay, control, 514
white emperor, graft transmission of the factor, 514
Graphocephala cythura (leafhopper), vector of Pierce's disease virus, 533
Grasses, see also Cereal
Bromus inermis, 654
Grasses—*continued*
Dactylis aschersoniana, purple leaf spot, 653
glomerata, purple leaf spot, 653
Dichanthium annulatum, downy mildew, 596
dollar spot, fungicide tests, 22
Echinochloa crus-galli, Ephelis oryzae on, 634
Elymus canadensis, 654
Fescue, Rhizoctonia blight on Alta and Kentucky 31 in Louisiana, 282
Festuca arundinacea, 654
elatoir, 654
Forage grasses, purple leaf spot, 466
Harding -, host for maize leaf-fleck virus, 687
melting out, fungicide tests, 22
Phalaris arundinacea, 654
Phleum pratense, 654
Setaria italica, Ephelis oryzae on, 634
snow mold, control, 475
fungicide tests, 516
Xanthomonas streak, 387
GREEN, G. J., (403)
GREEN, JOHN M., (98)
GREEN, RALPH J., (472)
GREENLEE, R. W., (472)
GREGORY, K. F., 613
GRIMM, G. R., (465)
GROGAN, R. G., 9, 215, (518), 573
GROSSO, J. J., (5)
Growth measurements, as indications of disease resistance of tobacco to Granville wilt, 284
Growth rate of fungi in culture, measured by photometric method, 11
Growth regulators, see Plant regulators
GUBA, E. F., 112
Guignardia bidwellii, production of substance inhibitory to virus, 45
GUPTA, B. M., 45
GUTHRIE, JAMES W., 466
Guttation, correlated with fungus infections, 520
Gymnosporangium juniperi-virginianae, inheritance of resistance in apple, 19

HAFIZ, ABDUL, 422
HAGEDORN, D. J., 10, (467)
HALTIWANGER, WILLIAM L., 467
HALL, ALICE, (481)
HALL, BERNARR J., (603)
HALLER, M. H., 341
HALPIN, J. E., 10, 245, (342)
HANSEN, H. N., 479, (480)
Hansenula saturnus, inhibition point at various pH by helixin, 169
HANSON, E. W., (10), (245), 467
HANSING, E. O., 10, 10
HARDISON, JOHN R., 514
HARE, W. W., 283
HARPER, F. R., (5)
HARVEY, JOHN M., 514
HAWLEY, W. O., (131)
HAWN, E. J., 510
HEGGESTAD, H. E., 10
Helixin, see Antibiotics
Helminthosporium avenae, longevity on stored grains, 13
carbonum, infecting apparently healthy corn seed, 286
nuclear cytology and morphologic variation, 480
dictyoides, tall fescue net blotch pathogen, 22
sativum, compared with Helminthosporium victoriae, 469
effect of light on conidium production, 342
factors affecting growth and sporulation on wheat, 453
longevity on stored grains, 13
more virulent light-colored race, 472
pathogenic on cereals, 287
sp., turf melting-out pathogen, fungicide tests, 22
teres, effect of light on conidium production, 342
longevity on stored grains, 13

Helminthosporium avenae—*continued*
victoriae, breeding of oats resistant to, 482
compared with Helminthosporium sativum, 469
control on oat with helixin B, 469
on oats, wheat and sorghum, seed treatments, 10
rag-doll method for testing oat seed resistance, 12
tagged with C^{14}, 431
Hemerick, G. A., (13), (468)
Handersonula toruloidea, on walnut, 478
Henning, Robin G., 467
Hepler, Paul R., (13)
Hepting, George H., 10, 115, 438
Herbert, T. H., (284)
Herbicides, diesel oil, diseased potatoes, 511
Dow general, diseased potatoes, 511
Shell 30, diseased potatoes, 511
Hess, G. E., (343)
Heterodera rostochiensis (nematode), effect of crop rotation, 345
on Lycopersicon spp., 461
temperature in relation to viability of larvae, 113
sp., on tobacco in Connecticut, 469
Heterokaryosis, of Helminthosporium carbonum, 480
Heuberger, J. W., 11
Hevea brasiliensis, see Rubber
Hewitt, William B., 158, 514, (518)
Hibbard, A. D., (470)
Hibiscus rosa-sinensis (Chinese hibiscus), foot rot, leaf and stem blight, 144
schizopetalus, foot rot, leaf and stem blight, 144
syriacus, tbacco ringspot virus on, 478
Higgins, Daniel J., 11
Higginsia hiemalis, cherry leaf spot pathogen, 14
Hildebrand, E. M., 283
Hildebrandt, Albert C., 467
Himelick, Eugene, (472)
Hingorani, M. K., (291), 486, 526
Hirsch, Ursula, (478)
Hoadley, A. D., 113, (114)
Hochstein, P. E., 11
Hoffman, Paul, 11
Holdeman, Q. L., 283
Hollis, John P., 11, 273, 483
Holmes, Francis O., 113, 467
Holton, C. S., 635
Homalodisca liturata (leafhopper), vector of Pierce's disease virus, 533
Hooker, A. L., (465)
Hooker, W. J., 583
Hoppe, Paul E., 11
Hordeum vulgare, see Barley
Hormones, see Plant regulators
Horn, Norman L., 670
Horner, C. E., 514
Horseradish (Armoracia rusticana), white rust, resistant hybrids, 109
Horsfall, J. G., (17), (113), (457), (473), (477)
Host penetration, by Stagonospora maculata on grasses, 655
Hostic races, defined, 645
Hotson, H. H., 11
Hougas, R. W., (25, (26), 109
Hough, L. F., 11, (19)
Houston, Byron R., 12, (15), 515, (518)
Hoyman, William G., 25
Hubert, Ernest E., 515
Hughes, Morris B., (428)
Humidity, effect on longevity, of Chalara quercina, 470
of cysts and larvae of golden nematode, 469
of sporangia of Phytophthora phaseoli, 468
Humus, effect on rate of damping-off of pine seedlings, 501
reduction in damping-off of conifer seedlings, 202
Hunter, Richard, (98)
Hyacinth, black rot of bulbs, 514
Hyalospora aspidiotus, overwintering, 474
Hydrogen-ion concenrtation, adsorption of tobacco mosaic virus by carborundum, 2
Chalara quercina, effect on growth, 2, 288
control of sweet potato soil rot by adjustment, 583
effect on growth, streptomycin and vitamin B-12 production of Streptomyces griseus, 123
effect on vesicle formation by Puccinia coronata avenae, 474, 581
helixin, inhibition and residual effect, 13
inhibition point of helixin on several pathogens, 168
relation to growth of, and lycopersin production by, two Fusarium spp., 120
spore germination of Colletotrichum lagenarium, 478
sporulation range of Stemphylium solani, 7
Hydrogen sulfide, possible role in fungicidal action of sulfur, 14
Hypomyces solani, fertilization of perithecial primordia, 480
f. cucurbitae, inheritance of sex, 480
Hypoxylon sp., on aspen, factors affecting, 463
Hyre, R. A., 468, 481

Indole acetic acid, see also Plant regulators
metabolic product of Ustilago zeae, 24
Inga edulis, spot anthracnose, 12
Inheritance of resistance, apple to cedar-apple rust, 19
barley to loose smut, 367
Brassica to black rot, 497
horseradish hybrids, white rust, 109
lima bean to downy mildew, 43
oat, to black stem, 16
to crown rust, 17
onion to downy mildew, 22
potato, multiple, 483
Sea Island cotton to Fusarium wilt, 287
soybean to frog-eye leaf spot, 660
spinach to cucumber virus 1, 305, 16
sugarcane to red rot, 282
tobacco, multiple disease resistance breeding program, 482
to black shank, 288
tomato, to anthracnose, 113
to late blight, 197
to tobacco mosaic virus infection, 467
Inhibition, in vitro antibiosis compared with soil test of actinomycete control of Pythium root rot, 284
of cucumber mosaic virus by plant extracts, 349
of virus infection, by fungal growth products, 240
Inhibition of seed germination, with extract of wood of Prunus spp., 285
Injuriogenic disease, defined, 283
Inoculation techniques, brown spot of corn, evaluation, 284
by tooth pick tip, for weak pathogens, 5
comparison of two methods on sporulation in culture, 7
methods used for evaluating disease resistance, 628
of cotton seedlings with Verticillium wilt, 288
uredospores on cereal leaves, 340
Inoculum potential of soil, tobacco black shank, 286
Insecticides, benzene hexachloride, amorphous compared with crystalline form, 200
Chlordane, onion maggot control, 15
DDT, amorphous compared with crystalline form, 200
onion maggot control trial, 15
Dieldrin, onion maggot control, 15
Heptachlor, onion maggot control, 15
lindane, onion maggot control, 15
octa-methylpyrophosphoramide, for control of sweet potato internal cork vector, 287
organo-phosphorous, as nematocides in vapor phase, 466
sodium arsenite, black measles of grape reduced by, 158
Systox, onion maggot control trial, 15
trial for control of root knot nematodes, 343
toxaphene, onion maggot control trial, 15
Insects, corn borer wounds as infection court for corn stalk rot, 20
feeding periods of aphids in relation to transmission of beet mosaic virus, 252

Insects—*continued*
multiplication in leafhopper vector of aster yellows virus, 14
multiplication of wound tumor virus in its vector, 269
peach silver mite, responsible for yellow spot, 443
Insects as vectors, aphids, alfalfa mosaic virus, 261
barley, yellow dwarf virus, 15
beet mosaic virus, comparison of four species, 252
maize leaf-fleck virus, 683
oat blue dwarf, 471
oat red leaf, 471
potato leaf roll, 540
temperature effect on strawberry yellows virus complex in the vector, 517
grasshopper, transmission of tobacco viruses, 355
leafhoppers, alfalfa witches' broom, density of planting affecting spread of disease, 649
Dalbulus maidis, inability of aster yellows virus to multiply in, 113
Macrosteles divisus, inability of corn stunt virus to multiply in, 113
multiplication of aster yellows virus in the vector, 14, 59
new curly top virus strain in Brazil, 396
papaya bunchy top virus, 3
Pierce's disease of grape and alfalfa, 533
recovery of virus from non-vector insects, 470
wound tumor virus, multiplication of the virus in its vector, 269
Ipomea batatas, see Sweet potato
Iris, black rot of bulbs, 514
Irrigation, effect on disease development of avocado root rot, 35
Ishii, Mamoru, (690)
Isolation technique, for soil-borne phycomycete species, 341
Itersonilia sp., parsnip canker pathogen, 23
Ivanoff, S. S., 12

Jackson, Elsa L., 480
Jackson, Herbert Spencer, a biographical sketch, 406
Jackson, L. W. R., 47
Jacobson, Louis, (478)
James, M. O., 144
Janson, B. F., 152
Jeffers, W. F., (342), 468, (473)
Jehle, R. A., 342
Jenkins, Anna E., 12, (342)
Jenkins, Wilbert A., 284
Jensen, D. D., (9), 12
John, B. G., Jr., 343, (470)
Johnson, Folke, (513)
Johnson, H. G., (18)
Johnson, J. Ralph, 284
Johnson, James, (8), 12
Johnson, Leander F., 12, 284, 468
Johnson, T., 403
Johnson, T. W., Jr., 342
Jones, Leo E., 515
Jones, Walter, 515
Jorgensen, Hans, (43)
Juglans, spp., see Walnut
Jump, J. A., (338)

Kahn, Robert P., 13
Kalanchoë daigremontiana, gall formation on, by morphological varients of Agrobacterium tumefaciens, 8
Kale, Fusarium wilt, 256
Kaufman, J., (112)
Kazmaier, Harold E., 13
Keil, Harry L., 113
Keitt, G. W., (13), (20), (168), (447), (479), 480, (506)
Kelman, Arthur, 284, (628)
Kendrick, James B., Jr., 515, (603)
Kendrick, James B., Sr., (9), 25
Kenknight, Glenn, 285, 468
Kernkamp, M. F., 13, 468
Keyworth, W. G., 113, 311
Kilpatrick, R. A., 285
King, T. H., (7), 468
Kingsolver, C. H., (340)
Kirkpatrick, Hugh C., 540
Klomparens, William, (22)
Klotz, L. J., (512)
Knowles, P. F., (515)
Kobel, F., 515
Kohlrabi, Fusarium wilt, 256
Kommedahl, Thor, 468
Kozlowski, Theodore T., 405
Kreitlow, K. W., (342), 469, (568)
Krog, Norman E., (468)
Kunkel, L. O., 27
Kuntz, J. E., (2), 13, (463)

Labiatae, genera infected by races of Puccinia menthae, 2
Legenaria leucantha (bottlegourd), mosaic disease on, 149
Lambertella pruni, production of substance inhibitory to virus, 45
Lane, George H., 25
Larson, R. H., 25, (26), (162), (183), (316), 469
Leach, J. G., (476), 537
Leaf and stem blight, of ornamental hibiscus, 144
Leaf clearing, histological, for examination of spore germination, 352
Lear, Bert, 193, (481), 489
Leben, Curt, 13, (20), 168, 331, 352, (447), 469, (506)
Legumes, seed treatments, 467
Lehman, S. G., 285
Lemon, brown rot, fungicide tests, 512
shell bark, control by pruning, 512
sieve tube necrosis, related to grafting, 18
Leone, Ida, (112)
Leptographium sp., effect on translocation in pine, 515
Leptosphaeria avenaria, incitant of black stem of oats, 16
Lethum australiense see Virus(es), tomato spotted wilt -
Lettuce, bacterial soft rot, 112
downy mildew, mode of infection, 513
drop, role of organic matter in soil, 518
mosaic, control, 573
Lewis, C. E., 342
Lewis, Ralph W., 657
Lewis, W. D., (1)
Light, effect on concentration of cucumber virus 1 in spinach, 308, 4
effect on condidium production in some species of Dematiaceae, 342
effect on flat rust development, 208
effect on rate of damping-off of pine seedlings, 501
effect on uredial development of Puccinia graminis avenae, 527
high intensity, increases chrysanthemum stunt symptoms, 341
required for wilt toxin production in culture, 8
Lilac, powdery mildew, absorption of sulfur by mycelium, 15
Lilly, V. G., (2)
Limber, Donald P., 578
Linn, M. B., (133)
Liquidambar styraciflua (sweet gum), bark canker, 16
Lithocarpus densiflorus (tanoak) susceptible to oak wilt fungus, 3
Livingston, J. E., 221
Locke, Seth B., (514), 516
Lockwood, J. L., 447
Logsdon, Charles E., 25
Longevity, in soil of Xanthomonas translucens, 387
in storage of several cereal seed fungi, 13
of Ditylenchus nematode, 464
Lownsbery, B. F., (345), 469, 651
Lownsbery, B. F., Jr., 13, (131)
Lownsbery, J. W., (13), (131)
Lownsbery, J. W., (13), (651)
Lu, Shi I., 480

Lucas, G. B., 285, (286)
Luke, Herbert H., 286, 469
Lupine, cover crop, breeding program, 283
Lupinus angustifolius, cover crop in Florida, 283
luteus, cover crop in Florida, 283
Luttrell, E. S., 469, 607
Lycomarasmin, possible role in chemotherapeutic treatment of Fusarium wilt, 465
role in tomato wilt, 18
Lycopersicon esculentum, see Tomato
Lycopersicon spp., early blight of, 467
susceptibility to golden nematode, 461
used to determine physiologic races of tomato anthracnose pathogen, 18
Lycopersin, factors affecting production of, by Fusarium lycopersici and F. vasinfectum, 119
Lyophilization of Puccinia uredospores, 263, 480

Machacek, J. E., 13
Macrophomina phaseoli, on bean, 607
on soybean, inoculation method, 5
Macrosiphum dirhodum (aphid), barley yellow dwarf virus vector, 15
granarium, barley yellow dwarf virus vector, 15
pisi, vector for alfalfa mosaic virus, 261
solanifolii, vector for alfalfa mosaic virus, 261
Macrosteles divisus (leafhopper), multiplication of aster yellows virus in, 59
multiplication of aster yellows virus in the vector, 14
not a vector for alfalfa witches' broom virus, 28
study on specific transmission of viruses, 663
Mai, W. F., 113, (193), 345, 461, 469, 481, (489)
Makila, Armas, (465)
Maleic hydrazide, see also Plant regulators
effect on phosphorus distribution in tomato, 22
Malic acid, basis of resistance in chickpea to Mycosphaerella blight, 422
Maramorosch, Karl, 14, 59, 113, 470, 663
Marcus, Carlton P., Jr., 342
Marmor lactucae, local lesion hosts for, 478
tabaci, see also Virus, tobacco mosaic
related to internal browning of tomato, 591
Marsden, David H., 113, 300
Marshall, B. H., Jr., 342
Marshall, N. L., 470
Martin, J. P., Jr., 342
Martin, Mary M., (493)
Martin, Norma, 294
Martin, W. J., (7)
Mason, Curtis L., 14
McBeth, C. W., 484
McCallan, S. E. A., 14, (15), (470), (477)
McClellan, W. D., 407
McClure, Thomas T., 14
McColloch, L. P., 425
McGrew, John R., 343
McKeen, C. D., 14, 14
McLaughlin, W. D., 470
McLean, D. M., (514), 516
McLean, John G., 26
McWhorter, F. P., (518)
von Mechow, Joyce, (469)
Medicago falcata, Volutella sp. parasitic on, 5
sativa, see Alfalfa
Meiners, J. P., 516
Melampsora epitea, overwintering, 474
lini, effect of temperature on viability and germination of spores, 204
lysis of uredospore germ tubes by lime-sulfur, 70
Melanogenesis, in Streptomyces scabies, related to toxin formation, 483
in Streptomyces scabies, substrate for, 273
Melanoplus differentialis (grasshopper), transmission of tobacco viruses by, 355
Mellor, Frances C., 516
Meloidogyne incognita v. acrita (nematode), on asparagus, 6
spp., identification by host reaction, 17
on snapdragon, 637, 641
Mentha spp., mint rust on, 2
Menzies, J. D., 516, 649
Merwarth, F. L., (114)
Meso-inositol, possible role in production of lycopersin by Fusarium vasinfectum, 121
Methyl-bis (β-chloroethyl) amine, used to induce virus mutation, 25
Micronutrients, see also Nutrition of microorganisms:
specific elements:
boron, in apple leaves and fruits, 464
role in celery adaxial crack, 603
cobalt, effect on production of streptomycin by Streptomyces griseus, 123
copper, effect on vitamin requirement of Coniothyrium fuckelii, 468
pigment production in Fusarium lycopersici and F. vasinfectum, 122
zinc, effect on growth of Fusarium lycopersici and F. vasinfectum, 121
effect on vesicle formation by Puccinia coronata avenae, 474, 581
growth and zinc content of tomato plants sprayed with zineb, 133
vitamins:
biotin, effect of copper on requirement of, by Coniothyrium fuckelii, 468
isoinositol, effect of copper on requirement of, by Coniothyrium fuckelii, 468
thiamin, effect of copper on requirement of, by Coniothyrium fuckelii, 468
vitamin nutrition of Alternaria solani, 657
vitamin nutrition of Chalara quercina in culture, 463
Microsphaera alni, absorption of sulfur by mycelium, 15
Middleton, John T., (515), 516, 603
Mikola, Peitsa, 202
Milbrath, J. A., (26), 347, (515), 516, (693)
Miller, Harold J., 114, 470
Miller, Julian H., 286
Miller, P. W., 517
Miller, Lawrence P., (14), 15, 470, (477)
Miller, W. E., (340)
Millikan, D. F., 470
Mills, W. R., 26
Mineral element deficiency, see also Nutrition, and Micronutrients:
boron, celery adaxial crack, 603
content of apple leaves and fruit, 464
zinc, in tomatoes, provided for by zineb spray, 133
Misra, A. P., 204
Mohajir, Abdul-Rasheed, 367
Moisture, in cured tobacco, related to chlorine content and development of stem rot, 10
soil, effect on development of safflower root rot, 33
Mold counts, in processed black rasperries, controlled by various fungicidal sprays, 2
Monarda spp., mint rust on, 2
Monardella spp., mint rust on, 2
Monilinia fructicola, control of fruit loss with volatile chemicals, 19
control of peach brown rot with DHA-S, 19
effect of actidione on conidia germination, 21
fungicide tests on peach fruit, 7
post-harvest treatment for peach, 341
Monilochaetes infuscans, sulfur soil treatment, 590
Mooar, Marie, (363)
Moon, H. H., (341)
Moore, E. L., (285)
Moore, J. Duain, (20), (22), 470, (477)
Moore, M. B., 471
Moorhead, Ellen L., 471
Moreira, Silvio, (280)

Morgan, O. D., Jr., 343, 471
Morphological variation of microorganisms, induced mutants of Pyrenochaeta terrestris, 188
Morris, C. L., 681
Morris, H. E., (101)
Mucor sp., associated with corn stalk rot, 20
Mullin, R. S., 15
Muncie, J. H., (512)
Murakishi, Harry H., 178, 339, 517
Murneek, A. E., 57
Murphy, H. C., (16), (474), 482
Mushroom crops, control of nematode diseases of, 4
Muskmelon, Fusarium wilt, virulent strain, 465
viruses on, 8
Mutations induced in fungi by incorporating fungicides in the medium, 471
Mycorrhiza, associated with potato phloem parenchyma, 25
Mycosphaerella melonis, on cucumber, 14
rabiei, basis of resistance in chickpea to, 422
sp., sooty blotch of Vitis californica, 518
Myrica carolinensis, yellows virus disease, 17
Myzus circumflexus (aphid), vector for beet mosaic virus, 252
persicae, vector for alfalfa mosaic virus, 261
vector for beet mosaic virus, 252
vector for maize leaf-fleck virus, 683
solani, vector for beet mosaic virus, 252

Narasimhan, M. J., 596
Narcissus, Fusarium basal rot, effect of temperature, 467
Nariani, T. K., (149)
Natti, John J., 481
Nectria canker, eradication experiment, 287
Nelson, Marjorie, (481)
Nelson, Paul E., 517
Nelson, Ray, 363
Nematocides, assay methods, 484
Nematocides, specific compounds, see also Soil fumigants
methyl bromide, for disinfestation of potato handling equipment, 489
organo-phosphorous insecticides on foliar nematode, 466
Nematodes, anabiotic survival of Ditylenchus, 464
awl — (Dolichodorus heterocephalus), 483
on celery, 175
on Chinese water chestnut, 114
control progress report, 484
dagger —, 483
detection methods, 484
earcockle —, role in tundu bacterial disease of wheat, 291
ectoparasites on various field crops, 9
factor in cracking of sweet potatoes, 15
factor in selection of Fusarium wilt resistant cotton, 287
foliar —, nematocidal action of various organo-phosphorous insecticides, 466
golden —, continuous potato cropping with yearly soil fumigation, 481
crop rotation, 345
effect of humidity on longevity of cysts and larvae, 469
hatching stimulants from potato roots, 466
methyl bromide disinfestation of potato handling equipment, 489
root galls on tomato, 466
soil fumigation experiments, 193
susceptibility of Lycopersicon spp. to, 461
temperature in relation to viability, 113
internal parasitism of plants, 484
on celery, 131
on citrus roots, 1
on mushroom crops, control, 4
on rice, control of white tip, 6
laboratory culture, 21
nematocide screening, 463
on rye cover crop, comparison of phytotoxicity of two nematocides, 6
Paratylenchus hamatus, on celery, 651, 13
Nematodes—*continued*
root-knot, control trials with Systox, 343
effect of potassium nutrition, 15, 343
entry of larvae into roots, 474
identification of species by host reaction tests, 17
life history of five spp., 20
on asparagus, 6
on peanut, 282
on snapdragon, 637, 641
sting — (Belonolaimus gracilis), 483
associated with cotton wilt, 283
on peanuts, 470
on strawberry, celery, and sweet corn, 173
stubby root —, 483
tobacco black shank, contributing factor, 15
tobacco cyst, in Connecticut, 469
Tylenchulus semipenetrans, on olive, 77
Nephelometer, construction of a simple —, 171
Neurospora sitophila, inhibitory action on virus infection, 240
Newhall, A. G., 15, 212
Newton, Nelson, 79
Nichols, Carl W., 517, 579
Nicotiana debneyi, source of blue mold and black root rot resistance in tobacco, 482
glutinosa, concentration of turnip virus 1 related to host nutrition, 477
root necrosis virus, 464
longiflora, source of resistance to tobacco black shank, 288
source of wildfire resistance in tobacco, 482
source of wildfire resistance in Wisconsin tobacco, 12
multivalivis, concentration of turnip virus 1 related to host nutrition, 477
spp., source of resistance to tobacco anthracnose, 343
tabacum, see Tobacco
Nielsen, L. W., 625
Nigrospora oryzae, associated with corn stalk rot, 20
Nitrogen mustard, induced biochemical mutants in Venturia inaequalis, 479
induced mutants of onion pink root fungus, 9, 183
used to induce virus mutation, 25
Nocardia **vaccinii** n. sp., gall incitant on blueberry, 249
Nodule bacteria, in soybean, effect of fungicide treatment, 19
Non-parasitic diseases:
fluorine toxicity, root and leaf content, 112
lemon sieve tube necrosis related to grafting, 18
poplar, yellow, blister shake, 21
potato, mahogany browning, effect of railroad transit, 112
stem-end browning, 25
tuber discoloration, 25
tuber heat injury, effect of storage temperatures, 344
spray injury, storage shrinkage of apple correlated with russeting, 344
Nursery stock, role in dissemination of soil pathogens, 478
Nusbaum, C. J., 15, 286
Nutrition of hosts and suscepts, see also Mineral element deficiency
foliar sprays:
boron, control of snow mold, 5
effect on celery adaxial crack, 603
tomato Fusarium wilt index increased, 3
zinc from zineb spray on tomato, 133
specific elements:
chlorine, in cured tobacco, development of stem rot, 10
nitrogen, effect on concentration of cucumber virus 1 in spinach, 377
phosphorus, effect of stunting agents in tomato, 22
effect on concentration of cucumber virus 1 in spinach, 377
effect on concentration of turnip virus 1 in Nicotiana spp., 477
potassium, effect on concentration of cucumber virus 1 in spinach, 377

Nutrition—*continued*
effect on root-knot nematodes, 15, 343
specific plants:
celery, boron deficiency, 603
Nicotiana spp., concentration of turnip virus related to host nutrition, 477
spinach, effect of nutrition on resistance to cucumber virus 1, 303
effect on concentration of cucumber virus 1 in, 377, 4
tomato, zinc provided in zineb, 133
Nutrition of microorganisms, see also Hydrogen-ion concentration, Micro-nutrients and Plant regulators
specific elements:
carbon, relationship between substrate sugars and sporulation, 7
requirements of Chalara quercina, 288
sources for growth of Chalara quercina, 2
sources for growth of Chalara quercina in culture, 463
sources, relation to growth and pigment in Fusarium spp., 120
nitrogen, requirements of Chalara quercina, 288
amino acid metabolism in melanogenesis of Streptomyces scabies, 483
inorganic and amino acid sources for growth of Chalara quercina, 2
sources for growth of Chalara quercina in culture, 463
zinc, vesicle formation of Puccinia coronata avenae, 474
specific organisms:
Alternaria solani, vitamin nutrition, 657
Chalara quercina, 2, 463, 288
Coniothyrium fuckelii, effect of copper on vitamin requirements, 468
Fusarium spp., relation of carbon source to growth and pigment production, 120
Hendersonula toruloidea, 478
Puccinia coronata avenae, effect on vesicle formation, 474, 581
Nutritive spray, see Nutrition, hosts and suscepts, foliar sprays
NYLAND, GEORGE, 517, (517)

Oak (Quercus spp.),
canker, eradication experiment, 287
wilt, chemotherapy, test of 37 organic compounds, 11
diploidization of pathogen, 537
factors influencing symptom development, 13
host response, plugging of xylem, 2
liberation of spores, 537
mycelial mat production by pathogen in Pennsylvania, 681
macroscopic sign of pathogen in natural infection 6
natural reservoir and spore liberation of pathogen, 476
potential source of inoculum, 531
perithecial stage in dissemination, 691
quick test for pathogen, 1
rapid determination by liquid culture, 57
woody hosts, 3
Oat (Avena sativa),
bioassay of Ceresan M on treated kernels, 222
black pstem, varietal resistance, 16
blue dwarf, in Minnesota, 471
crown rust, varietal response to physiologic races of the pathogen, 474
varietal resistance to Race 45, 17
disease resistance breeding, 482
leaf anatomy affected by smog, 558
longevity in storage of several cereal seed fungi, 13
mosaic virus, new, in Calif., 12
red leaf, in Minnesota, 471
root rot, in Tennessee, 287
Septoria black stem, in Minnesota, 466
smut, seed treatment, 10

Oat—*continued*
stem rust, morphological and pathological studies of 3 races of incitant, 486
races of incitant, 526
Victoria blight, comparison of seed treatments, 10
control with helixin B, 469
mass testing for resistance, 12
resistant varieties, 482
yellow dwarf virus of barley on, 15
OLIEN, CHARLES R., (471)
Olive, citrus-root nematode on, 77
OLMSTED, DONALD S., 26
Onion, blast, control, 15
blast and mildew, control with carbamates, 212
downy mildew, inheritance of resistance, 22
maggot, insect control, 15
mildew, 15
pink root fungus, pathogenicity of induced mutants, 9, 183
purple and brown blotch, 20
smut, control, 469
smut and maggot, combination control, 15
Orange, citrus-root nematode, leaf mottle, 1
Orchard grass, purple leaf spot, 466, 653
Orchid, Fusarium wilt and root rot, 517
leaf and petiole mottle virus complex, electron microscope studies, 79
virus diseases, 12
virus particles from several genera, 9
Cattleya, new virus disease in Hawaii, 517
viruses, serological detection, 478
Dendrobium, leaf mosaic virus, 339
Vanda, mosaic virus on, 178
transit rot of flowers, 373
Organic matter, role in lettuce drop, 518
Ornamentals, silky thread blight, seasonal relations, 287
ORSENIGO, M., (38)
Oryza sativa, see Rice
OSWALD, JOHN W., (11), 15, 518
OTEIFA, B. A., 15, 343
OWEN, JOHN H., 286
OWENS, ROBERT G., 471

PALM, ELMER T., 518
PALMER, H. C., 472
Pantothenic acid, content of rust infected bean leaves, 481
Papaya (Carica papaya), bunchy top virus, 3
Parasitism, related to physiologic specialization in Colletotrichum lini, 18
role of toxins, 483
Paratylenchus hamatus (nematode), on celery, 13, 651
PARKER, M. W., (341)
Parsnip, canker, 23
Pathic races, defined, 645
PATTON, R. F., 16
Peach, anthracnose, in Georgia, 343
bacterial spot, dormant spray for control, 14
brown rot, control of fruit rot, 19
organic vs. inorganic fungicides for control of, 7
storage and transit losses, 19
fruit rots, post-harvest treatment, 341
phony disease, acid test studies, 468
review of control program, 286
wild plum reservoir, 287
ringspot, resistance conferred by mild strain, 512
viroses, hot water treatment, 517
X disease, dodder transmission of the virus, 475
yellow spot, mite injury, 443
Pea (Pisum sativum),
damping-off, seed treatment, 470
Pythium seed decay and seedling blight, 516
seed treatment, 10
varietal response to various dry and slurry applications, 55
viroses, cross-protection tests, 10

Peanut (Arachis hypogaea),
root knot nematode, soil fumigation, 282
southern blight, factors in control, 282
sting nematode, 470
Pear, fire blight, rapid inoculation of seedlings, 341
PECK, HARRY D., JR., (5)
Pectinase activity, of fruit rot fungi, 474
Penetration and infection of tobacco by black shank pathogen, 286
Penetration of leaf by Phytophthora infestans, 16
Pepper (Capsicum frutescens),
damping-off, caused by Aphanomyces cladogamus, 14
fruit morphology related to internal rots, 7
Verticillium wilt, factors affecting pathogenicity of incitant, 515
Peppermint (Mentha piperita),
root and rhizome rot, 514
Verticillium wilt, control in planting stock by heat treatment, 472
Peridermium **appalachianum** n. sp., a new rust on Virginia pine, 10, 115
Peronospora destructor, on onion, control, 212
resistance to, 22
PERRY, V. G., (173)
PERSONS, T. D., 286
PERERSEN, D. H., 343
PETERSON, L. C., (26)
PETERSON, LEWIS E., (583)
PETERSON, W. H., (613)
Petunia, phytotoxic response of seedlings to formaldehyde, 171
pH, see Hydrogen-ion concentration
Phaseolus spp., see Bean
Phloem, bidirectional movement in, 385
Phloroglucinol test, evaluation for potato virus leafroll diagnosis, 481
for phony disease, 285
Phoma sp., inciting rootlet rot of alsike clover, 514
Phomopsis cinerescens, on fig, 513
Phosphate effect in virus inoculations, 137
Photoperiod, effect on concentration of cucumber virus 1 in spinach, 308
Phragmidium rubi-idaei, on raspberry, 477
Phyllosticta sojaecola, on soybean, 342
Physalis floridana, immunological relationship of potato leaf roll virus strains, 26
Physoderma maydis, inoculation into corn, technique evaluation, 284
Physalospora ilicis, 479
obtusa, on apple, 288
tucumanensis, on sugar cane, 282
Physiogenic disease, defined, 283
Physiologic diseases, see Non-parasitic diseas s
Physiologic specialization,
developmental races, defined, 645
environmental races, defined, 645
hostic races, defined, 645
pathic races, defined, 645
cereal rusts, biochemical differences between uredospores, 3
oat crown rust, 474
onion purple and brown blotch pathogen, 20
root-knot nematodes, host reaction, 17
wheat powdery mildew, 8
wheat stem rust, survival of races of the pathogen, 479
Collectotrichum phomoides, 18
lini, 18
Fusarium bulbigenum var. niveum on muskmelon, 465
conglutinans, races inciting Crucifer wilts, 1, 255
oxysporum f. perniciosum on mimosa, 694
Phytophthora fragariae, races of, 468
infestans, appearance and survival of new races, 481
on tomato and potato, 645
races developed on potato hybrids, 26
races on tomato, 461
Physiologic specialization—*continued*
Pseudomonas tabaci, pathogenicity compared on tobacco and soybean, 4
Puccinia graminis avenae, 526
menthae, races, 2
Streptomyces scabies, races on potato, 26
Physiologic specificity of pathogenesis, 483
Phytolacca decandra (Poke), cucumber mosaic transmission studies, 6
Phytomonas tabaci, resistance, 12
Phytophthora cactorum var. applanata, hibiscus foot rot, 144
cinnamomi, on avocado, 35
soil fungicide tests, 24
citrophthora, on lemon, control, 512
drechsleri, on safflower, 21, 32
susceptibility tests, 219
fragariae, physiologic races, 468
infestans, appearance and survival of new races, 481
breeding potatoes for immunity to late blight, 277
effect of temperature on viability of sporangia in the field, 482
leaf penetration, 16
pathogenesis of late blight correlated with meteorological data, 481
physiologic races, 645
powdery scab as an infection court for, 343
on potato, 26
on tomato, 461
resistance to, in tomato, 197
spore dispersal hypothesis, 323
palmivora, hibiscus leaf and stem blight, 144
on rubber, 547
parasitica var. nicotianae, effect of soil fumigation, 285
estimating inoculum potential of soil, 286
host-parasite relations in resistant and susceptible tobacco varieties, 286
nematodes as a factor in tobacco black shank severity, 15
wilt mechanism in tobacco, 472
phaseoli, on lima bean, 43
longevity and zoospore germination study, 468
sp., inciting turnip storage rot, 515
spp., substances stimulatory to sexual stage, 24
Phytotoxicity, antibiotics, on agar plate test for virus inhibition, 331
comparison of two nematocidal soil fumigants on rye cover crop, 6
copper sulfate dormant spray on peach, 14
formaldehyde residue in flats, 171
helixin, 168
related to lipid-solubility, 17, 457
trichloroethane and tetrachloroethane, to peach fruit, 342
Pigment production, by Fusarium lycopersici and f. vasinfectum, 119
stimulation of melanogenesis in Streptomyces scabies, 273
Pimpernel, water (Samolus parviflorus), curly top virus on, 2
Pine, jack (Pinus banksiana), damping-off, effect of humus, 202
loblolly (P. taeda), needle browning, 282
red (P. resinosa), needle droop, 16
Scots (P. sylvestris), damping-off, affected by soil fertility and illumination, 501
shortleaf, (P. echinata), effect of little leaf on seed quality, 57
Virginia (P. virginiana), a new rust on, 10, 115
a new rust, 10, 115
western white, (P. monticola), pole blight, 515
white (P. strobus), blister rust, local control, 475
Piricularia oryzae, effect of light on conidium production, 342
PIRONE, P. R., 16
PLAKIDAS, A. G., 16, (144)

Plant disease forecasting, potato late blight, 482
correlated with meterological data, 481
Plant regulators,
actidione, fruit development arrested in cherry, 14
indoleacetic acid, produced by Exobasidium camelliae var. gracilis in culture, 147
produced by Ustilago zeae, 24
indolebutyric acid, effect on tobacco mosaic virus, 517, 579
effect on virus concentration in cultured tissue, 515
maleic hydrazide, used in fungicide screening technique for snap bean powdery mildew, 114
naphthaleneacetic acid, effect on tobacco mosaic virus, 517, 579
effect on growth of tobacco mosaic virus in tissue culture, 467
pentachlorobenzoic acid, used in fungicide screening technique for snap bean powdery mildew, 114
various, effect on disease resistance of tomato to Fusarium wilt, 465
Platanus acerifolia (London plane), bark canker, 16
canker stain, 236
occidentalis, canker stain, 236
Plectodiscella veneta, fungicide tests, 23
Pleospora sp., on gladiolus causing red leaf spot, 363
Plum, myrobalan (Prunus cerasifera), indexing for viruses, 512
wild, phony disease, 282, 287
Pollard, E. C., 472
Pon, D. S., 472
Poole, D. D., 16
Poplar, yellow, blister shake, 21
Popp, W., 472
Populus spp., see Aspen
Porter, C. A., 518
Porter, C. L., 472
Potato (Solanum tuberosum),
alfalfa witches' broom virus in, 27
bacterial ring rot, 25
effect of railroad transit, 112
bacterial soft rot, effect of railroad transit, 112
role of suberization and periderm formation, 481
brown rot, inoculation methods, 629
calico virus, strains, 516
disease resistance, breeding, 483
Fusarium rot, effect of railroad transit, 112
golden nematode, continuous cropping, 481
crop rotation, 345
soil fumigation study, 193
green dwarf induced by beet curly top virus, 516
heat injury of stored tubers, 344
internal browning, 25
late blight, appearance and survival of new races of the incitant, 481
breeding for immunity, 277
disease forecasting, 482
genetic factors for resistance to the races of the pathogen, 26
meterological correlation, 481
powdery scab as an infection court for, 343
races of pathogen, 645
temperature effect on viability of incitant sporangia, 482
late blight rot, effect of railroad transit, 112
leaf roll, aphids as vectors, 540
evaluation of phloroglucinol test, 481
influence on ascorbic content of tubers, 516
leaf roll virus, strains, 26
leaf roll net necrosis, effect of railroad transit, 112
mahogany browning effect of railroad transit, 112
mycorrhiza-like mycelium associated with tubers, 25
powdery scab, as infection court for Phytophthora infestans, 343
scab, disease development related to tuber size, 297
resistance to, 26
Potato—*continued*
scurf, control with chlorinated phenols, 512
seed piece decay, control, 26
dry fungicides, 25
fungicide tests, 26
stem-end browning (non-parasitic disease), 25
stem end browning (virus), effect of railroad transit, 112
tuber discoloration, factors, 25
tuber diseases, effect of railroad transit, 112
Verticillium wilt, varietal resistance, 25, 26
viroses, control by chemical roguing, 511
"virus-free" plants yielding rod-like particles, 466
X virus, transmitted by grasshopper in tobacco, 357
Pound, Glenn S., (4), 16, 83, 301, (306), (377), (448), (473), (477)
Powdery mildew, control with Iscothan on cantaloupe, 335
snap bean, technique for fungicide screening tests, 114
wheat, reaction of susceptible and resistant varieties, 8
Powers, Harry R., Jr., 472
Price, W. C., (8), 16, (45), (240), (471)
Principe, P. A., 123
Pristou, R., 16
Probst, A. H., (660)
Prunus americana, reservoir for peach phony disease virus, 287
avium, tobacco ringspot virus on, 478
spp., phony disease on wild plum, 282, 287
Pruning, for control of Dutch elm disease, 113
lemon trees for control of shell bark, 512
white pine blister rust, local control, 475
Pseudomonas caryophylli, inoculation studies on carnation, 342
glycina, halo strain on soybean, 299
lachrymans, on cucumber, 105
marginalis, on lettuce and escarole, 112
phaseolicola, compared with Pseudomonas glycina (halo strain) on soybean, 299
toxin production, 475
solanacearum, artificial inoculation of tomato, 23
evaluation of tobacco resistance to, 284
inoculation methods used for evaluating disease resistance of tomato, 628
tabaci, comparison of six isolates, 4
Puccinia asparagi, in Illinois, 13
coronata, lyophilization of uredospores, 263
physiologic specialization in oat, 474
sugar and amino acid composition of uredospores, 3
avenae, vesicle formation, influence of pH and zinc, 474, 581
carthami, on safflower, 5, 211
control by seed treatment, 108
graminis, lyophilization of uredospores, 263
avenae, difference found in sugar and amino acid composition of uredospores among two races of, 3
morphological and pathological studies of three races, 486
physiologic races, 526
uredospore inoculation technique, 340
secalis, owerwintering of uredospores, 403
tritici, differences found in sugar and amino acid composition of uredospores among four races of, 3
fungicide test, 465
inhibition and counter-inhibition, 11
sorus production on albino barley seedlings, 177
survival ability of races, 479
uredospore inoculation technique, 340
glumarum, lysis of uredospore germ tubes by lime-sulfur, 70
spp., lyophilization of uredospores, 480
triticum, mutation, 479
Pullularia sp., role in needle droop of red pine, 16
Purdy, Laurence H., Jr., 518
Pycnathemum spp., mint rust on, 2
Pyrenochaeta terrestris, pathogenicity of induced mutants, 9, 183

Pyridine, technique for clearing leaves, 352
Pyrophyllite, used in inoculation technique for pear seedlings, 341
Pythium acanthicum, on sterilized straw in soil, 20
arrhenomanes, antagonism toward, 468
in soil, 12
inhibition by actinomycetes, 284
by bacteria, 464
by fungi, 286,469
observations on, 4
pathogenic on cereals, 287
irregulare, jack pine seedlings damping-off, 202
on sterilized straw in soil, 20
paroecandrum, on sterilized straw in soil, 20
spp., inciting damping-off and root rot of alfalfa, 613
pathogenicity on red clover seedlings, 10, 245
on corn, 467
on pea, 516
sp., on peppermint, 514
ultimum, jack pine seedlings, damping-off, 203

Quarantine, effect in control of peach phony disease, 286
Quercus spp., see also Oak
acutissima (Asiatic oak), susceptible to oak wilt fungus, 3
dentata (Asiatic oak), susceptible to oak wilt fungus, 3
falcata, spot anthracnose on, 12
laurifolia, dagger nematode on, 484

Raabe, R. D., 17, 448, 473
Radiation, see also Light
gamma, possible use in plant disease therapy, 599
ultra-violet, induced biochemical mutants of Venturia inaequalis, 479
induced sporulation of Stemphylium solani in culture, 7
X-ray, possible use in plant disease therapy, 599
used to induce mutations in lupine cover crop breeding program, 283
Radioactive elements, as tracers in study of microbial toxins, 483
C^{14}, labeled fungus spores and mycelium, 23, 431
respiratory metabolism of Streptomyces scabies, 5
study of fungicidal action, toxcity and absorption, 478
Cs^{137}, study of fungicidal action, toxicity and absorption, 478
Co^{60}, possible use in plant disease therapy, 599
P^{32}, effect of stunting agents on phosphorus distribution in tomato, 22
effect on tobacco mosaic virus content of tobacco plants, 519
possible use in plant disease therapy, 600
study of fungicidal action, toxicity and absorption, 478
to measure translocation in pole blighted pine, 515
Rb^{86}, translocation in oak wilt, 2
study of factors influencing oak wilt development, 13
S^{35}, studies on lilac powdery mildew, 15
breakdown products of dithiocarbamates, 477
labeled dithiocarbamates, fungicidal action, 472
study of fungicidal action, toxicity and absorption, 478
Radish (Raphanus sativa),
Fusarium wilt, 1
physiologic races, 255
mosaic, study of virus particle, 623
Rankin, Harvey W., 287
Raski, D. J., 484
Raspberry (Rubus idaeus, R. occidentalis),
anthracnose, comparison of fungicides, 8, 23
bacterial fire blight, 114
mold count in processed fruit, effect of various fungicidal sprays, 2
spur blight, comparison of fungicides, 8
storage rots, controls, 24
Verticillium wilt, 8
yellow rust, 477
Rawlins, W. A., (15), (212)
Raychaudhuri, S. P., 17, 114, 591
Redbud, see Cercis canadensis
Reddy, C. S., (19)
Reed, H. E., 17, 287
Reilly, J. J., 473
Respiratory metabolism of Streptomyces scabies, 5
Rex, Edgar G., (236)
Rich, Avery E., 26
Rich, Saul, 17, (113), 114, 353, 457, 473, (477)
Richards, Sterling J., (35)
Richardson, J. K., 171, 297
Rhizoctonia microsclerotia, on soybean, 1
ramicola, on ornamentals, 287
solani, an incitant of alfalfa crown bud rot, 510
an incitant of root and rhizome rot of peppermint, 514
inhibited by Streptomyces sp., 473
on bean, 607
on forage legumes and grasses, 281
on jack pine seedlings, damping-off, 202
on lima bean, tolerance to, 515
on potato, control with chlorinated phenols, 512
on strawberry, 283
in Arkansas, 8
variation in culture, 473
sp., causing damping-off of conifer seedlings, 464
on grains, 468
on stock, 476
possible role in nematode celery disease, 13
spp., aerial blight of forage crops, 282
dried grain inoculum, 469
on soybean, 1
Rhizopus nigricans, post-harvest treatment for peach fruit, 341
Rhodotorula gracilis, inhibition point at various pH by helixin, 169
Rhopalosiphum maidis (aphid), barley yellow dwarf virus vector, 15
maize leaf-fleck virus vector, 683
prunifoliae, barley yellow dwarf virus vector, 15
maize leaf-fleck virus vector, 683
Rhubarb, bud rot (winter injury), reminiscence on, 512
Rhynchosporium secalis, in barley, field inoculation technique, 17
Ribes spp., eradication on burned-over area, 476
Rice (Oryza sativa),
white tip, control of incitant nematode, 6
laboratory culture of incitant nematode, 21
nematocide tests, 463
Rieman, G. H., (25), 26, (109)
Riker, A. J., (2), (13), (463), (467), (613)
Roach, Harry Q., (112)
Roane, Curtis W., 480
Roberts, D. A., 287, 381
Rochow, W. F., (473)
Rogers, C. H., 485
Rogers, J. B., (693)
Roistacher, Chester N., 171
Root graft, transmission of carnation mosaic virus, 21
Root injury, as a factor in assessment of chemotherapeutants, 311
reduction in disease severity of Fusarium wilt, 113
Root-knot nematode, see Nematodes: root-knot
Rosberg, David W., (79)
Rose, mosaic virus, 413
Rosen, H. R., 17
Ross, A. Frank, (464), 473, (540)
Roth, Elmer R., 287
Roth, Lewis F., 518
Rowell, J. B., (6), 17, (480)
Rushdi, M. K., 473
Rust, asparagus, 13
barley stem, on albino seedlings, 177
bean, pantothenic acid content of infected leaves, 481
Race 85 (new) in Maryland, 342
cedar-apple, inheritance of resistance in apple, 19
cereal, lysis of uredospore germ tubes by lime-sulfur, 70

Rust—*continued*
flax, disease development, 204
mint, physiologic races, 2
rye stem, overwintering of uredospores, 403
safflower, varietal differences in susceptibility, 5
short season adaptation, 474
Virginia pine, 10, 115
wheat, stem, fungicide test, 465
inhibition and counter-inhibition, 11
Rubber, black thread, 547
Ruga verrucosans var. **solanacearum** n. var., strain on tomato in Brazil, 402
Rutabaga (Brassica napobrassica), mosaic on, 2
turnip virus 1 on, 258
Rye (Secale cereale),
root rot, in Tennessee, 287
stem rust, overwintering of uredospores, 403

Saccharomyces cervisiae, effect of chloranil on fermentive enzyme systems, 11
inhibition point at various pH by helixin, 169
pastorianus, inhibited in the soil, 493
Safflower (Carthamus tinctorius)
foot and root disease, 211
Phytophthora root rot, testing for resistance, 219
varietal susceptibility, 5, 21
root rot, 32
rust, seed treatment, 108
varietal susceptibility, 5
Sambucus canadensis, tobacco ringspot virus on, 478
Samolus parviforis, curly top virus on, 2
Samson, R. W., (482)
Sasser, J. N., 17, 343, 474
Satureja vulgaris, mint rust on, 2
Savile, D. B. O., 474
Schechtman, A. M., (478)
Scheffer, R. P., 18, 474
Schlegal, David E., 519
Schmidt, C. G., (340)
Schmitthenner, A. F., 18, 474
Schneider, C. L., 18, 18
Schneider, Henry, 18, 18
Schreiber, Ray, (236)
Schroeder, Harry W., (468)
Schultz, E. S., (277), 343
Schuster, M. L., 211
Schwinghamer, E. A., 19
Scirrhia acicola, on loblolly pine, 282
Sclerospora **dichanthicola** sp. nov., on perennial forage grass in India, 598
graminicola, on corn, 675
macrospora, on corn, 675
Sclerotinia homeocarpa, dried grain inoculum, 469
on turf, fungicide tests, 22
sclerotiorum, on bean, fungicide tests, 477
on lettuce, 518
spp., growth rates, 471
Sclerotium rolfsii, on alfalfa, 1
on bean, 607
on Ladino clover, 1
on peanuts, 282
sp., on watermelon in Florida, 286
Scott, D. H., (468)
Sebek, Oldrich K., 119
Secale cereale, see Rye
Sedimentation, of virus particles, different in cucumber leaf and corolla preparations, 19, 420
Seed drying, corn, at high temperatures increases susceptibility to soil pathogens, 221
Seed germination, inhibited by extract from wood of Prunus spp., 285
Seed infestation, carrot with Stemphylium radicinum conidia, 217
Seed injury, corn, effect on emergence, 221
Seed maturity, corn, effect of drying on emergence, 221
Seed production, reduced in little leaf pine, 57
Seed transmission of disease,
cabbage black rot, 5
cherry, ringspot and yellows viruses, 4
soybean, fungi isolated from, 285
tall fescue net blotch, 22
tobacco mosaic virus in tomato, 114
Seed treatment, see also under Fungicides, specific compounds
comparison of dry and slurry application, 52
culture plate technique for agar diffusion assays, 447
alfalfa, for control of damping-off, 22
bean, for anthracnose, 1
for charcoal rot, 607
corn, varietal differences, 284
cucumber angular leaf spot, 107
legumes, 467
peas, 10
rice, white tip, various nematocides for control of, 6, 463
sugar beet, 13
wheat, smut, 10
tundu disease, 293
Segall, Ralph, (15)
Semeniuk, G., (20)
Senseney, C. A., 343
Septoria avenae, on oat, in Minnesota, 466
nodorum, longevity in stored grains, 13
Serological test for tobacco mosaic virus strains, 471
Setaria italica, Ephelis oryzae on, 634
Sexual reproduction of Hypomyces solani, 480
Sexuality of fungi, Chalara quercina, 438, 463
Shafer, William B., 519
Shands, H. L., (367)
Sharp, E. L., 263, 474, 480, 581
Sharvelle, Eric G., 19
Shaw, Charles Gardner, (479)
Shay, J. R., (11), 19
Shepard, C. E., (282), 287
Sherf, Arden F., 19
Sherwin, Helen S., (342), (469), 568
Shurtleff, M. C., 19
Shutak, V. G., (19)
Siegel, Albert, (464), 474, 519
Siegel, Benjamin M., (473)
Silky thread blight of ornamentals, seasonal relations, 287
Sill, W. H., Jr., 19, 328, 349, 420, 442, 474
Silverborg, Savel B., (547)
Siminoff, Paul, (91), (493)
Simmons, Marr D., 474
Sisler, H. D., 475
Skiles, Robert L., 20
Skoog, H. A., 475
Slack, D. A., (470), 475
Slagle, C. W., 240
Sloan, M. J., (15), (15)
Smart, Helen F., (481)
Smeby, R. R., 506
Smith, Albert L., 287
Smith, F. G., (263), (474), (480), (581)
Smith, Harlan E., 20, 20
Smith, M. A., (341)
Smith, N. R., (88), (249)
Smith, W. L., Jr., (341), 344, 475, 481
Smog, effect on oat leaf anatomy, 558
Smut, barley, covered —, factors affecting experimental inoculation, 117
loose —, inheritance of resistance, 367
mass inoculation of grain seed, 472
oat, seed treatments, 10
sorghum, seed treatments, 10
wheat, seed treatments, 10
Smut fungi, species concept and nomenclature, 479
Snapdragon, root-knot nematodes on, 637, 641
Snow mold, on forage crops, 5
Snyder, William C., (215), (479), 480

Soil fumigants, chloropicrin, for black shank of tobacco, 285
DD (dichloropropene-dichloropropane mixture),
on peanut, 282
on rye cover crop, 6
sweet potato cracking, partial control, 15
for control of golden nematode, 195, 345, 481
DD + chloropicrin, on peanut, 282
dichlorobutenes, for control of golden nematode, 195
Dowfume N, for control of golden nematode, 195
on peanut, 282
ethylene dibromide (Dowfume W-40)
for peanut root-knot, 282, 470
for potato golden nematode, 195
for rye cover crop, 6
for tobacco black shank, 15
methyl bromide, for black shank of tobacco, 285
for celery nematode, 13
Soil moisture, effect on safflower root rot development, 220
Soil organisms, isolated on sterilized straw in soil, 20
Soil sterilization, effect on soybean-nodule bacteria, 19
Soil temperature, effect on sweet potato internal cork lesions, 625
Soil treatment, Arasan for control of Fusarium disease of asparagus, 9
mercuric chloride, for control of snow mold, 5
sulfur, for control of sweet potato soil rot, 583
Soja max, see Soybean
Solanine, inhibitory to Colletotrichum phomoides, 1
Solanum sarchoides, weed host of Verticillium albo-astrum, 519
Solanum tuberosum, see Potato
Sorghum, smut, seed treatments, 10
Victoria blight, comparison of seed treatments, 10
Soybean (Soja max)
bacterial blight, halo strain, 299
as infection path for wildfire pathogen, 4
bacterial pustule, as infection path for wildfire pathogen, 4
foliage diseases, dried grain inocula, 469
frog-eye leaf spot, 660
fungi isolated from seed, 285
inoculation method for studies on charcoal rot and Diaporthe stem canker, 5
interaction of seed treatment and nodule bacteria inoculation, 19
Phyllosticta canker and leaf spot, in Maryland, 342
Rhizoctonia aerial blight on, 1
seed discoloration caused by Cercospora sojina, 568
wildfire, comparison of pathogenicity of six isolates, 4
Spinach, bacterial soft rot of packaged —, 475
cucumber virus 1, 4, 16
effect of host nutrition on virus concentration, 377
white rust, environmental factors, 448
predisposing factors, 17
studies on the pathogen, 473
Spongospora subteranea, as infection court in potato for Phytophthora infestans, 343
Spore dispersal of Phytophthora infestans, 323
Spore germination, effect of actidione, 21
fungitoxicity of various chemotherapeutants, 128
histological examination on cleared leaves, 352
Sporulation, comparison of two inoculation methods, 7
effect of light on several species of Dematiaceae, 342
Alternaria solani, effect of medium, 11
Phytophthora spp., substances stimulating to sexual stage, 24
Pyrenochaeta terrestris, pycnidial production of induced mutants, 183
Stemphylium solani, induced by ultra violet, 7
Sprague, Roderick, 475
Spreaders, see Fungicides, general: Spreaders
Spruyt, F. J., (193)
Squash, virus on, 8
winter, ringspot virus from tomato, 23
Staffeldt, E. E., 20
Stagonospora arenaria, compared with S. maculata, 653
maculata, on grass, 466, 653
meliloti, pathogenic on alfalfa, 513
Stahmann, M. A., (19), (25), (183), (420)
Stakman, E. C., (6), (480)
Staley, J. M., (476), (531), 691
Starr, Mortimer P., 114, (320)
Statistics, of half-tree plot technique of fungicide testing, 353
Steiner, G., 484
Steere, Russell L., 519
Stemphylium radicinum, on carrots, 215
as factor in carrot root scab complex, 9
sarcinaeforme, mechanism of tolerance to phenols and quinones, 473
solani, sporulation induced in culture, 7
on tomato, fungicide tests, 114
sp., on gladiolus causing red leaf spot, 363
Stessel, G. J., (6), 20
Stevenson, F. J., 277, 483
Stewart, Dewey, 344
Stewart, Donald M., 475
Stewart, R. N., (342)
Stock (Matthiola incana)
Fusarium wilt, physiologic races, 255
Race 3, 1
Rhizoctonia root injury, chemotherapy, 476
Stoddard, E. M., (72), 476, (651)
Stokes, G. W., (25), (26), (109)
Stomata, role in penetration in black rot of crucifers, 162
Stone fruits, virus invasion of immune varieties, 512
Stoner, Warren N., 683
Storage loss, control of fruit rots, 19
Storage, potato tubers, heat injury, 344
Storage rots, of small fruits, controls, 24
Storage temperature, effect on sweet potato internal cork lesions, 625
Stover, R. H., 476
Strawberry (Fragaria chiloensis),
black root rot, 517
crown and root rot, 283
red stele, physiologic races of the incitant, 468
Rhizoctonia blight, 8, 283
root anatomy, 517
sting nematode on, 173
storage rots, controls, 24
Verticillium wilt, from weed host reservoir, 520
virus complexes, 20, 516
yellows virus complex, effect of temperature, 517
Streptomyces albus, Thiolutin from, 57
aureofaciens, inhibition of Bacillus subtilis in soil, 294
griseus, effect of cobalt on production of streptomycin and vtamin B-12, 123
ipomea, on sweet potato, 583
rimosus, inhibition of Bacillus polymyxa in soil, 294
scabies, inhibited on sweet potato by sulfur soil treatment, 589
respiratory metabolism, 5
stimulation of melanogenisis, 273
on potato, 26
venezuelae, production of chloromycetin in amended soil, 91
Strong, F. M., (506)
Strumella canker, eradication experiment, 287
Sufficool, J. R., (512)
Sugar beet (Beta vulgaris),
Cercospora leafspot, development of a resistant monogerm variety, 344
curly top virus, strains, 514
damping-off, control by antagonistic bacterium, 465
disease resistance breeding, 482
root rot fungus, host range, 18
seedling diseases, control, 13
vein clearing induced by leafhopper, 535
yellows, in U. S., 341

Sugarcane (Saccharum officinarum),
red rot resistance, 282
Pythium root rot, 12
inhibited by actinomycetes, 284
by bacteria, 464
by fungi, 469
mosaic virus, inheritance of resistance, 282
strains, 281
Sugars, in uredospores of various races of cereal rusts, 3
Sulfadiazine, inhibition of stem rust of wheat, 11
Sulfhydryl-containing compounds, inhibition of chloranil by —, 11
Survival ability of races of wheat stem rust pathogen, 479
SUTTON, DONALD D., (320)
SWAEBLY, MARY ANN, 476
Sweet potato (Ipomea batatas),
cracking, partial control, 15
internal cork, effect of temperature, 625
resistance and control, 287
root-symptomless clones, 428
soil rot, sulfur soil treatment, 583
storage-house fumigation, 513, 693
Sweet William (Dianthus barbatus), carnation mosaic virus in, root transmission, 21
SWENSON, K. G., 261
SYLVESTER, EDWARD S., 252
Syringa vulgaris, ring spot virus, graft transmission, 463
Systemic fungicides, see Chemotherapeutants
Systox, inhibitory to nematode hatching, 343

TAKAHASHI, WILLIAM N., 623, 690
Tangelo, Orlando (Citrus paridisi × C. reticulata), bud transmission of cachexia disease, 265
TAPKE, V. F., 117
TARJAN, A. C., 20, 114, 131, 637, 641
TAYLOR, A. L., (474), 484
TAYLOR, CARLTON F., 344
TAYLOR, GORDON S., 20, 476
TAYLOR, JACK, 288
Techniques, apparatus and equipment:
control chamber for growing plants, 59
culture plate for agar diffusion assays, 447
nephelometer, construction of a simple —, 171
settling tower inoculation technique for uredospores on cereal leaves, 340
soil fumigation, equipment, 193
sprayer, for concentrated fungicides, 3
Techniques, tests and methods:
accumulation of fungicides by spores determined by amylase inhibition, 471
agar plate method of testing inhibition of lesion-producing viruses by antibiotics, 331
bacterial inoculum, virulence maintained by deep-freeze method, 13
chemotherapeutants, test for activity, 127
chemotherapy, bioassay using bean wilt, 72
complement fixation for differentiating strains of TMV, 16
cytological preparations of fungi, 480
disease resistance, testing for multiple —, in tobacco, 5
dried inoculum, of foliar pathogens grown on grain medium, 469
field inoculation for testing barley resistance to scald, 17
fungicide tests using half-tree plots, 114, 353
fungitoxicity tests using spore germination in microbeakers, 519
germination tests, for seed corn in cold soil, simplified method, 11
host range, preliminary screening technique for seedling resistance to sugar beet root rot fungus, 18
inducing mutation of virus in vivo by nitrogen mustard, 25
inoculation, by tooth pick tip, for weak pathogens, 5
methods used for evaluating disease resistance, 628
of barley, for post-emergence smutting, 117
of flax with Fusarium, 515
of grain seed with smut spores, 472
Techniques—*continued*
of pear seedlings with Erwinia amylovora, 341
partial vacuum, quantitative pathogenicity tests for Ustilago zeae, 17
isolation, of single-spore or hyphal-tip, using reflected light, 118
of soil-borne phycomycete species, 341
jelly glass method for testing pathogenicity of Pythium spp. against red clover, 245
laboratory ED 50 related to field performance of fungicides, 113
leaf clearing with pyridine for examination of spore germination, 352
lyophilization of Puccinia uredospores, 263, 480
manipulation of crystalline inclusion bodies from mosaic infected tobacco, 519
nematodes, laboratory culture, 21
phloroglucinol tests for phony disease, 285
photometric method for determining growth of fungi, 11
plant growth inhibitors used for bean powdery mildew fungicide screening tests, 114
plating method unreliable as bioassay of black rot infestation of cabbage seed, 5
radioactive carbon labeled fungus material, 23, 431
radioisotopes used in study of microbial toxins, 483
rag-doll test for determining oat resistance to Victoria blight, 12
root-knot nematode identification by host reaction, 17
serological test using sheep red blood cells for TMV, 471
tissue culture, virus concentration in, 515
translocation study of viruses, 381
virus inactivation, test for effectiveness of water soluble compounds, 417
virus inoculation of leafhopper, 269
zoospore production for inoculum, Aphanomyces cochlioides, 18
Telia, of flax rust pathogen, factors influencing development, 207
Temperature, effect on disease development:
cabbage mosaic virus, resistance to and concentration of, 83
carnation bacterial wilt, 342
corn, damping-off, 221
crucifer black rot, symptom expression, 162
flax rust, 204
narcissus, Fusarium basal rot, 407
pepper, Verticillium wilt, 515
potato, tuber storage heat injury, 344
red clover, Pythium spp. on, 245
safflower root rot, 33, 219
spinach, cucumber virus 1 symptoms, 16
white rust, factor in pathogenesis, 17
strawberry yellows virus complex in vector, 517
sweet potato internal cork lesions, 625
tomato, Alternaria fruit rot, 425
Temperature, effect on specific pathogens:
Chalara quercina, growth and sporulation, 2
longevity, 470
cucumber virus 1, concentration in spinach, 4, 306
golden nematode, larvae viability, 113
Phytophthora infestans, viability of sporangia, 482
phaseoli, longevity of sporangia, 468
Pseudomonas phaseolicola, toxin production, 475
Puccinia graminis avenae, uredial development, 527
Rhizoctonia solani, growth, 473
Sclerotinia spp., growth rates, 471
Sclerotium rolfsii, growth, 1
THANOS, ANDREW, 21
THIRUMALACHAR, M. J., 596
THOMAS, C. A., 21, 108, 219
THOMAS, HAROLD E., (519)
THOMAS, H. REX, 43
THOMAS, W. D., JR., 21, 214
THORN, W. A., (478)
THORNBERRY, H. H., (2), (123), (289)

THORNE, GERALD, (77)
THORNTON, N. C., (476)
THURSTON, H. D., 481
Tilletia elymi, homothallic nature of, 635
TIMS, E. C., (22)
Tissue culture, concentration of virus in, 515
  growth of Uromyces caladii in, 479
Tobacco (Nicotiana tabacum),
  anthracnose, source of resistance among Nicotiana spp., 343
  black shank, breeding for resistance, 288
    effect of soil fumigation, 285
    estimating inoculum potential of soil, 286
    host-parasite relations in resistant and susceptible tobacco varieties, 286
    nematodes as a contributing factor, 15
    wilt mechanism, 472
  Brazilian streak virus, 231
  disease resistant fluecured varieties, factors in behavior, 284
  fungus infection related to guttation, 520
  Granville wilt, evaluation of resistance, 284
    inoculation methods, 629
  leaf curl virus, transmission studies, 343
  lethal virus, in fluecured area, 284
  mosaic virus, effect of plant regulators on infection, 517, 579
    inactivation study, 417
    resistance in Wisconsin tobacco, 8
    transmitted by grasshopper, 355
  multiple disease resistance, breeding program, 482
  ringspot virus, electron microscopy, 343
    transmitted by grasshopper, 357
  stem rot of partially cured tobacco, 10
  testing methods for evaluation of combinations of disease resistance, 5
  viruses, translocation of, 381
  wildfire, comparison of pathogenicity of six isolates, 4
    resistance, 12
TODD, E. H., 21, (463)
Tomato (Lycopersicon esculentum),
  alfalfa witches' broom virus in, 27
  Alternaria rot, temperature effect, 425
  anthracnose, control, 114
    effect of fungicides on pathogen, 470
    growth of pathogen inhibited by solanine, 1
    pathogen variation, 18
    resistance, 113
  curly top, new strain in Brazil, 396
  early blight, chemotherapy for, 7
    control with helixin, 168
    fungicide tests, 23
    races of the pathogen, 467
  fruit rot, pathogen variation, 18
  Fusarium wilt, chemotherapy for, 7, 465
    control with thiolutin, 338
    distribution of resistance throughout host, 474
    effect of foliar sprays, 3
    effect of plant regulators on susceptibility, 465
    possible use of ionizing radiation in therapy, 599
    root injury and chemotherapy, 113, 311
    wilting mechanism, 18
  gray leaf spot, control, 114
  internal browning, 591
    seed transmission of tobacco mosaic virus, 114
  late blight, meteorological correlation, 481
    races of the pathogen, 645
    resistance, 197
    source of resistance, 466
    susceptibility to physiologic races of the pathogen, 461
  root galls, induced by golden nematode, 466
  southern bacterial wilt, artificial inoculation, 23
    inoculation methods used for evaluating disease resistance, 628
Tomato—*continued*
    tobacco mosaic on, effect of date of inoculation, 463
    resistance to infection, 467
THOMPKINS, JOHN P., (8)
TOOLE, E. RICHARD, (438), 694
Toxicity, fluorine injury to vegetation, 112
  of amorphous droplets compared to crystalline forms of DDT and BHC, 200
Toxin, formation by microorganisms, 483
  from Verticillium, production and characterization, 472
  lycomarasmin, possible role in chemotherapeutic treatment of Fusarium wilt, 465
  produced by Pseudomonas phaseolicola, 475
  production, method for study with C^{14} labeled fungus material, 23
  relation to tissue respiration, 483
  wilt producing in raspberry, from Verticillium sp., 8
Transit diseases, potato, 112
Transit loss, control of fruit rots, 19
Translocation of viruses, independent of sugar translocation, 381
Trichoderma viride, production of gliotoxin by, 465
Trichothecium roseum, production of substance inhibitory to virus, 45
Trifolium, see Clover
TRUE, R. P., 21, (470), 476, (531), (537), (691)
TRYON, E. H., (21)
Tryptophan, effect on growth of tobacco mosaic virus in tissue culture, 467
Tuber formation, potato, associated with mycorrhiza, 25
  influence on scab infection, 297
TUITE, J., 476
Tulip, black rot of bulbs, 514
Tumors and tumor formation, see Galls
Tung, die back, 521
Turbidity, measurement of, with an easily constructed nephelometer, 171
Turf, see Grasses
Turnip, Phytophthora storage rot, 515
Turnip-greens, leaf spot control, 281
Tyloses, formation in oak wilt, 2
TYNER, L. E., 476
Typhula itoana, on turf, fungicide tests, 516
  spp., on winter wheat in Washington, 474

ULLSTRUP, ARNOLD J., 675
Ulmus americana, tobacco ringspot virus on, 478
  sp., spot anthracnose, 12
Urocystis cepulae, on onion, control, 469
  gladiolicola, sori in gladiolus corms, 578
Uromyces caladii, growth in tissue culture, 479
  caryophyllinus, carnation resistant to, 112
  phaseoli, infection of bean leaves related to guttation, 520
    pantothenic acid content of uredospores, 481
  phaseoli-typica, Race 85 (new) in Maryland, 342
Ustilago hordei, factors, 117
  nuda, barley seed treatment, 476
  spp., mass inoculation of cereal grains, 472
  zeae, colorless mutants, 480
    free amino acids and carbohydrates synthesized by, 6
    production of indole acetic acid by, 24
    quantitative pathogenicity test, 17
    sporidial mutants, 480

VAARTAJA, OLLI, 501
Vaccinium ashei, galls on, 249
  australe, galls on, 249
  irrgatum, silky thread blight on, 287
Vaccinium spp., see also Blueberry
VALLEAU, W. D., 21, 40, 288
VANDERMARK, J. S., (19)
VARNEY, E. H., 22, 477
Vasates cornutus (mite), responsible for yellow spot of peach, 443
VASUDEVA, R. S., 149, 291

VATTER, A. E., (3)
VAUGHAN, EDWARD K., 477, 519, (520)
VAUGHN, JOHN R., 22
VENKATAKRISHNIAH, N. S., 634, 668
Venturia inaequalis, gene pairs conditioning pathogenicity, 480
induced biochemical mutants, 479
Verticillium albo-atrum, inoculation technique, cotton, 288
on mint, control by heat treatment, 472
on pepper, factors affecting pathogenicity, 515
on potato, 25
production of exotoxin, 472
weed host of, 519
sp., four biotypes on raspberry, 8
Vesicle formation, in Puccinia coronata avenae, influence of pH and zinc, 474, 581
Vetch, anthracnose, 670
Vicia faba, see also Bean, broad
chocolate spot on, testing chemotherapeutants, 127
spp., see Vetch
Vigna sinensis, see Cowpea
Vinca rosea, alfalfa witches' broom virus in, heat inactivation, 27
Viruses, general:
antibiotics, inhibition of tobacco necrosis virus by toximycin, 20
chemical test for peach phony virus, distribution of wood giving positive reaction in inoculated trees, 468
Viruses, general:
chemotherapy of tobacco mosaic virus with 1182, 465
competition between two strains of tobacco mosaic virus, 464, 474, 519
complement fixation for differentiating strains of TMV, 16
concentration of Brazilian tobacco streak virus in necrotic and recovered leaves, 233
concentration of virus in cultured tissue, 515
concentration, related to air temperature in cabbage mosaic, 83
constitution of virus particles studied by deuteron bombardment, 472
cross-protection tests with five viruses from canning peas, 10
effect of plant regulators on tobacco mosaic virus, 517, 579
electron microscopy of virus particles from several orchid genera, 9
electron microscopy, preparation of material from cucumber corolla, 19, 420
environmental conditions affect concentration of cucumber virus 1 in spinach, 4
inactivation of bottlegourd mosaic by various plant extracts, 149
inactivation, test of 54 water soluble compounds on infectivity of tobacco mosaic virus, 417
infectivity correlated with chloroplasts in centrifugation of cucumber virus 1, 420
inhibition, by fungal growth products, 240
mechanism, by fungal growth products, 45
of cucumber virus 1 from oriental cucumber, 349
of virus infectivity by grasshopper buccal fluid, 357
inoculation, aluminum oxide as abrasive for tobacco mosaic virus, 2
phosphate effect, 137
silicon dioxide as abrasive for tobacco mosaic virus, 2
insect vectors, inability of virus to multiply in non-vectors, 113
invasion of immune varieties of stone fruits, 512
latent period and generation time of tobacco mosaic virus following inoculation, 520
multiplication of aster yellows virus in its insect vector, 14, 59
multiplication of virus following leaf inoculation, 520
mutations induced in potato virus X by nitrogen mustard, 25
mutation rates of several strains of tobacco necrosis virus, 156
Viruses, general—*continued*
nucleic acid study of red clover vein mosaic virus, 518
origination hypothesis for tobacco mosaic virus, 21
phloroglucinol test for phony disease, 285
phosphate effect, on infectivity of tobacco mosaic virus, 2
on plant virus inoculation, 137
primary lesions to determine relative susceptibility of plants, 113
protein polymerization in mosaic-diseased tobacco extract, 690
purification (partial), of tomato spotted wilt virus, 3
recovery of virus from non-vector leafhoppers, 470
recovery of water pimpernel from curly top, 2
resistance to reinfection by curly top virus strains in recovered plants of water pimpernel, 2
rod-like particles from "virus-free" potato plants, 466
seed transmission of virus from tomatoes showing internal browning, 591
serological test using sheep red blood cells, 471
specific transmission of viruses by leafhoppers, 663
translocation of sap-transmissible viruses, 381
transmission studies, 31
Virus(es):
alfalfa mosaic —, aphid transmission, 261
on bean, 344
red clover reservoir, 467
strains in potato, 516
alfalfa witches' broom —, control of spread, 649
host range and thermal inactivation, 27
apple dwarf fruit and decline —, 4
aster yellows —, evidence of multiplication of virus in its insect vector, 59
inability to multiply in corn stunt virus vector, 113
multiplication in its insect vector, 14
study on specific transmission by leafhoppers, 663
barley mosaic —, in Calif., 12
barley yellow dwarf —, symptoms and aphid vectors, 15
bayberry yellows —, 17
bean southern mosaic —, deuteron bombardment, effect on infectivity and serology, 472
inhibition by fungal growth products, 240
inhibition tests, 46
bean yellow mosaic —, cross-protection tests, 10
in Montana, 101
necrotic lesion strain, 24
on Gladiolus, 65
red clover reservoir, 467
beet mosaic —, aphid transmission study, 252
beet yellows —, in Washington, 516
bottlegourd mosaic —, host range, 149
cantaloupe mosaic —, in Calif., 8
carnation mosaic —, inactivated by zinc ion, 418
properties, 289
root transmission, 21
cereal yellow dwarf —, host range, 518
cherry little —, grafting experiments, 477
cherry mora —, 347
cherry necrotic ringspot —, strains and symptoms, 470
cherry ringspot —, effect on tree growth, 470
seed transmission, 4
separation, 517
cherry western X little —, effect on seed, 515
cherry yellows —, seed transmission, 4
separation, 517
chrysanthemum stunt —, symptoms increased under high intensity light, 341
Citrus tristeza —, grafting experiments, 280
clover (alsike) mosaic —, red clover reservoir, 467
clover (red) vein mosaic —, crystalline inclusions, 518
red clover reservoir, 467
clover (sweet) wound tumor —, multiplication in its vector, 269
corn (maize) leaf-fleck —, 683
corn stunt —, specificity of vector, 113
study on specific transmission by leafhoppers, 663

Virus(es)—*continued*

cucumber mosaic —, cowpea as an assay host, 328
cowpea strain susceptible to systemic infection, 442
electron microscopy, 19, 420
from pepper and alfalfa, 7
in Calif., 8
in Gladiolus, 65
in spinach, 16
effect of various factors on concentration, 4, 306, 377
temperature effect on disease development, 301
inhibitor from resistant cucumber, 349
strain 28, cross-protection tests, 10
translocation in plants, 381
transmission studies on poke, 6
cucumis —2C, host range, 149
curly top —, recovery of water pimpernel from, 2
elm —, strain of tomato ringspot, 477
elm mosaic —, transmitted to tobacco, 22
filaree red leaf —, studies, 110
grape, Pierce's disease —, vectors, 533
lettuce mosaic —, control, 573
local lesion hosts for, 478
lilac ringspot —, transmission, 463
muskmelon mosaic — (curcurbit ring mosaic —), in Calif., 8
muskmelon vein necrosis —, symptoms and host range, 8
Nicotiana glutinosa root necrosis —, 464
oat blue dwarf — (?), 471
oat mosaic —, in Calif., 12
oat red leaf — (?), 471
orchid diamond mottle —, 12
orchid flower breaking —, 12
orchid leaf and petiole mottle complex, electron microscope studies, 79
orchid leaf mosaic —, 12, 339, 178
orchid leaf patterning —, electron microscope studies, 9
orchid ringspot —, 12
orchid (Cattleya) —, serological detection of, 478
papaya bunchy top —, studies on, 3
pea common mosaic —, red clover reservoir, 467
pea enation —, cross-protection tests, 10
pea streak —, cross-protection tests, 10
red clover reservoir, 467
peach —, hot water treatment, 517
peach phony —, acid test studies, 468
phloroglucinol test, 285
reservoir in wild plum, 282
review of control program, 286
wild plum reservoir, 287
peach ringspot —, resistance conferred by mild strain, 512
peach X disease —, symptom variation, 519
symptoms on sweet cherry, 519
dodder transmission, 475
pepper ringspot —, strain of cucumber mosaic —, 7
Plantago mosaic —, possible origin of TMV, 21, 40
potato green dwarf induced by beet curly top —, 516
potato leaf roll —, aphids as vectors, 540
evaluation of phloroglucinol test, 481
immunological and histological relationship between strains, 26
influence on ascorbic acid content of tubers, 516
potato X —, in tobacco, transmitted by grasshopper, 357
mutations induced by nitrogen mustard gas, 25
relative concentration, 473
translocation in plants, 381
potato Y —, relative concentration, 473
radish mosaic —, particle size, 623
rose mosaic —, properties and host range, 413
rutabaga mosaic —, similar to turnip virus 1 group, 2
squash mosaic —, in Calif., 8
strawberry — complexes, 516
strawberry — 1 and 2, aphid transmission, 20
dodder transmission, 20
strawberry yellows — complex, effect of temperature, 517

Virus(es)—*continued*

sugar beet curly top —, new strain on tomatoes in Brazil, 396
strains, 514
sugar beet yellows —, in U. S., 341
sugarcane mosaic —, inheritance of resistance to, 282
strains, 281
sweet potato internal cork —, effect of temperature on symptom development, 625
resistance and control, 287
root-symptomless clones, 428
tobacco leaf curl —, transmission studies, 343
tobacco lethal —, new strain or complex, 284
tobacco mosaic —,
chemotherapy, 465
competition between two strains, 464, 474, 519
complement fixation for differentiating strains, 16
concentration in cultured tissue, 515
crystalline inclusion bodies, 519
deuteron bombardment, effect in infectivity and serology, 472
effect of carborundum on infectivity, 2
effect of P^{32} on concentration and symptoms in tobacco plants, 519
effect of plant regulators on infection, 517, 579
growth in tissue culture, 467
in tomato, effect of date of inoculation, 463
inactivated by thiamine hydrochloride, zinc chloride, 417
inhibition by terramycin, 333
inhibition tests, 46
latent period and generation time following inoculation, 520
possible intermediate protein in formation of —, 690
possible origin, 21, 40
relation to internal browning of tomato, 591
resistance in tomato, 467
resistance in Wisconsin tobacco, 8
rib grass strain, compared with virus from tomatoes showing internal browning, 592
serological test, 471
strain 1952D, primary necrotic lesions, 113
strains, seed transmission in tomato, 114
translocation in plants, 381
transmitted by grasshopper, 355
tobacco necrosis —, inhibition by toximycin, 20
inhibition of lesions by antibiotics, 331
inhibition tests, 46
mutation rates of 11 strains, 156
tobacco ring spot —, electron microscopy, 343
in Gladiolus, 65
inhibition of lesions by antibiotics, 331
translocation in plants, 381
transmitted by grasshopper, 357
woody hosts, 478
tobacco streak —, Brazilian, 231
tomato ringspot —, from elm, 477
in winter squash, 23
tomato spotted wilt —, partial purification and electron microscopy, 3
turnip mosaic —, effect of host nutrition on concentration of —
in Nicotiana spp., 477
from rutabaga, host range and properties, 258
in Ontario, 2
western watermelon mosaic —, aphid vector, 8
wheat mosaic —, in Calif., 12
wheat yellow streak mosaic —, effect of temperature on pathogenesis, 474
wild cucumber mosaic —, in Calif., 8
Vitamins, see also Micronutrients, vitamins
B_1, inactivation of tobacco mosaic virus by, 417
inhibitory to inoculation of Colletotrichum lagenarium on cucumber, 478
B_{12}, effect of cobalt on production, 123

Vitamins—*continued*
folic acid, role in stem rust of wheat, 11
pantothenic acid, content of rust infected bean leaves, 481
para-amino benzoic acid, role in stem rust of wheat, 11
Vitis californica, sooty blotch, 518
Vitis spp., see also Grape
Volutella sp.:, on alfalfa and clover, 5

Wadley, Bryce N., 519
Waggoner, Paul E., 22, 323, (465), 477, 599, 645
Walker, J. C., (19), (25), (65), (105), (162), (183), (316), (328), (349), (420), (442), (469), (474)
Wallace, A. T., (283)
Wallace, H. A. H., (13)
Wallin, J. R., 482, (645)
Walnut, Hendersonula toruloidea on, carbohydrate-nitrogen ratio in disease development, 478
Walter, James M., 197, 236
Walters, H. J., 355
Warid, W. A., 22
Watermelon, Sclerotium sp. on, 286
western — virus on, 8
Watertor, Jean L., (467)
Weathers, Lewis G., (377), 477
Weaver, Ernest P., (16)
Webb, T. E., (283)
Webb, R. E., 26
Weber, George F., (287)
Weber, Paul V. V., 22
Wedding, R. T., (603)
Weed killers, effect on potato tubers, 25
Weed, Richard M., (14), (15), 477
Weintraub, M., (2), (258), 417
Welch, J. E., (573)
Wells, Homer D., 22
Welsh, Maurice F., 477
Wernham, C. C., (467)
Wester, R. E., (43)
Wheat (Triticum spp.),
earcockle nematode, 291
head blight, development, 453
leaf rust, mutant strain of the incitant, 479
longevity in storage of several cereal seed fungi, 13
mosaic virus, new, in Calif., 12
powdery mildew, reaction of resistant and susceptible varieties, 8
root rot, in Tennessee, 287
smut, seed treatments, 10
snow mold, control, 475
stem rust, fungicide test, 465
inhibition and counter-inhibition, 11
survival ability of races of the pathogen, 479
tundu bacterial disease, 291
Victoria blight, comparison of seed treatments, 10
yellow dwarf virus of barley on, 15
yellow streak mosaic virus, effect on temperature on pathogenesis, 474
Wheeler, H. E., 23, (284), 431, 483
White, Irene, 288
Wiant, James S., (112)
Wiehe, P. O., 521
Wildman, Sam G., (474), (478)
Wilds, George James, Jr., biographical sketch, 485
Wiles, A. B., 105, 288
Wilhelm, Stephen, (517), 519
Wilkinson, R. E., 23, 478
Williams, H. E., (512)
Williams, Lansing, 478
Williams, Robley C., (519)
Willison, R. S., (417)
Wilson, E. E., 478, 520
Wilson, J. D., 23
Wilson, Norton S., 443
Wilson, R. A., (341)
Wilting mechanism, in tobacco black shank, 472
in tomato Fusarium wilt, 18
Wind dispersal of spores, 323
Winstead, N. N., 23, 628
Winter, H. F., 23
Wolcyrz, Sylvia, (240)
Wolf, Frederick A., (147)
Wolf, Frederick T., 24, 147, (288)
Womeldorph, S. E., Jr., (341)
Wood decay, reduced by soil cover in basementless houses, 341
Wood preservatives, histological technique for study of, 300
Worthington, John T., (425)
Wounds, relation to infection in black rot of crucifers, 162
Wright, C. M., (513)
Wright, W. R., (341)
Wu, Y. S., 177

X protein, possible intermediate in formation of TMV, 690
Xanthomonas campestris, Brassica spp. resistant to, 497
in cabbage seed, 316
penetration and symptom types, 162
studies on seed transmission, 5
malvacearum, varietal resistance in cotton, 98
phaseoli, chemotherapeutants, 72
in apparently healthy pinto beans, 214
var. fuscans, in apparently healthy pinto beans, 214
pruni, control on peach by dormant spray, 14
translucens, on grasses and cereals, 387

Yale, John W., 520
Yarwood, C. E., 137, 478, 481, 520
Young, Roy A., 26, (513), 520, (693)
Young, William J., (2), 24
Younkin, S. G., 114

Zaitlin, Milton, 478
Zantedeschia elliottiana (yellow calla), bacterial chalk rot, 320
rhamanni (pink calla), bacterial chalk rot, 320
Zaumeyer, W. J., (7), 24, 344
Zea, mays, see Corn
Zentmeyer, George A., 24, 35, 478
Zinc, see also Micronutrients
chloride, inactivation of tobacco mosaic virus by, 418
sulfate, inactivation of tobacco mosaic virus by, 418
Zoospores, technique for production in Aphanomyces spp., 18
Zuckerman, Bert M., (6)